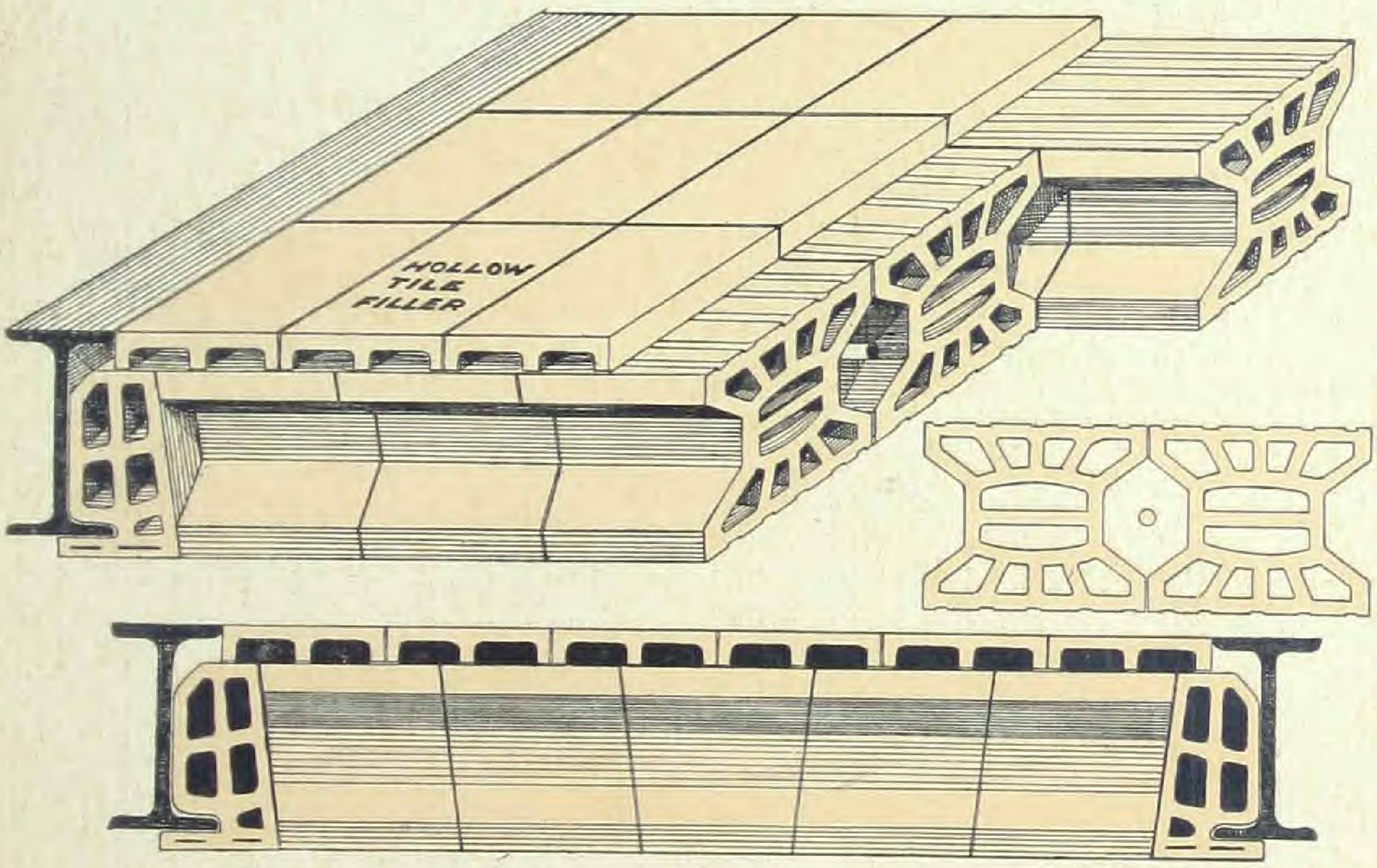
Illustrated Catalogue.

Fire-proof Building Materials.



Henry Maurer & Son,

420 East 23d Street New York City.

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Maurer, N. J.

[redacted]

Philadelphia Office
18 to 24 S. 7th St.

ESTABLISHED 1856.

HENRY MAURER & SON,

MANUFACTURERS OF ....

Fire-proof Building Materials

OF EVERY DESCRIPTION
AND FOR ALL PURPOSES.

Flat and Segmental Hollow Tile Arches.

PARTITION AND FURRING BLOCKS
COLUMN AND GIRDER PROTECTION
ROOF AND CEILING TILES
FIRE-CLAY FLUE LININGS, ETC., ETC.

POROUS TERRA-COTTA OF ALL KINDS AND SIZES.
BUILDING (COMMON) BRICK, ALSO

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CLAY RETORTS OF ALL SHAPES AND SIZES.

Office and Depot

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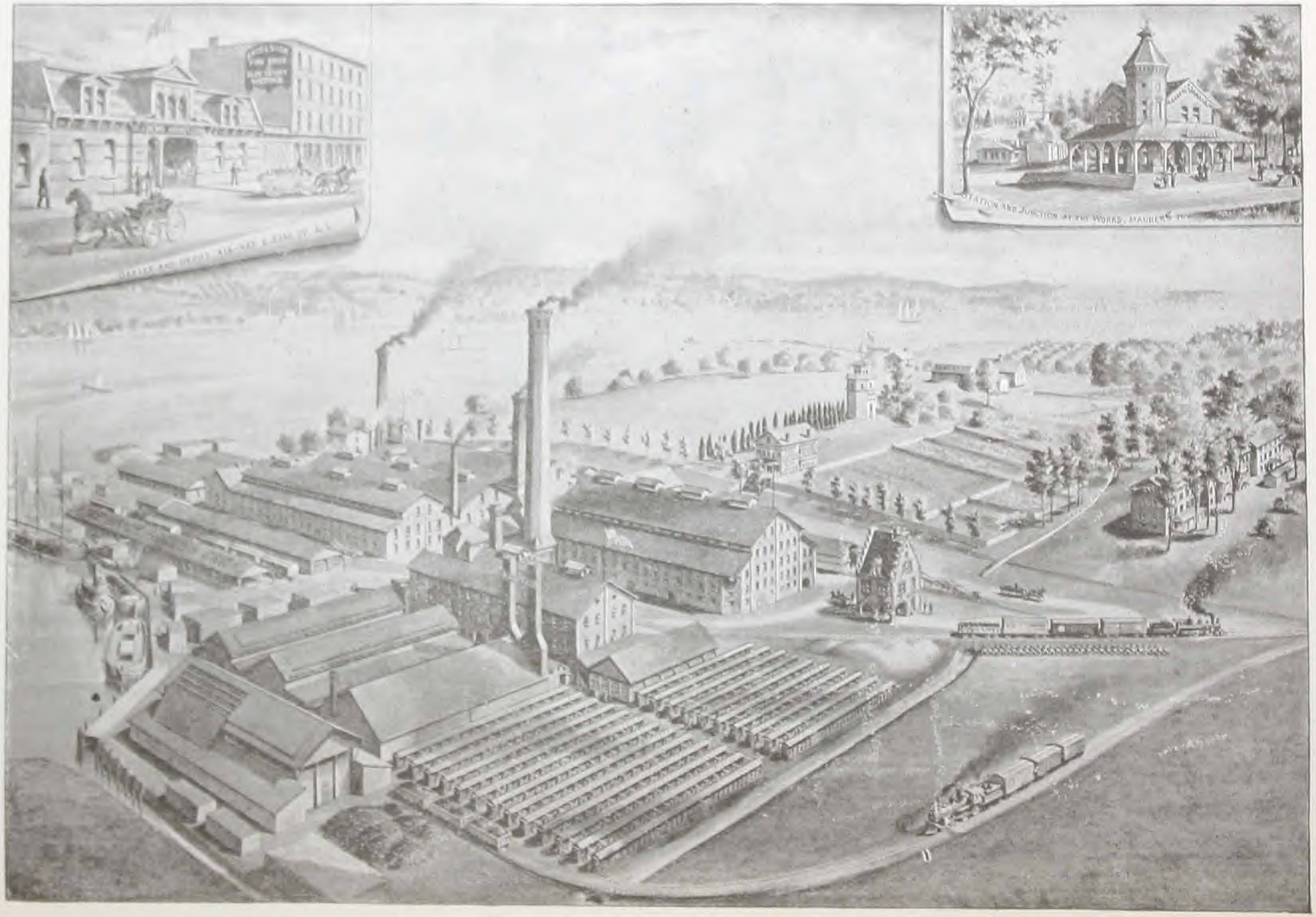
18 to 24 South 7th St.

FACTORIES . . . . MAURER, NEW JERSEY.

ELEVENTH EDITION.

Index.



VIEW OF WORKS. MAURER.—MIDDLESEX CO., N. J. (On Central R. R. of N. J. and Staten Island Sound).

Introductory.

THE demand for our tenth edition having outstripped the supply, we are forced to somewhat anticipate the issue of this, our eleventh edition, and in presenting it to you, we beg to couple therewith our thanks for the kind and constant support accorded us in the past. We shall continue, as heretofore, to study the requirements of our patrons, as in pleasing them we best serve our own interests.

The necessity of economizing space in our large cities brought about the erection of the so-called sky-scrapers, and these again enforced a study of the material best adapted for insuring safety against fire; the concensus of opinion among those best qualified to judge, pointing to Terra Cotta as the best material for that purpose, has so increased the demand that we are constantly adding to our manufacturing establishment, with the result that to-day we can, without boasting, claim to possess the most complete and extensive works of the kind in the country. We are thereby enabled to sustain our reputation for prompt delivery and first quality of material, the surest foundations for continued success.

We use no plaster, lime, cement, or ashes in course of manufacture; nothing but Fire-Clay, and of this we own numerous beds, almost inexhaustible, within a few feet of our works, making us independent of outside suppiy.

The works are situated at Maurer, N. J., on Woodbridge Creek and Staten Island Sound (see cut opposite, taken in 1892). Controlling large water frontage and dockroom, with railroad switches alongside, we are possessed of every facility for shipments to all points reached by either rail or water.

We are thus prepared to furnish estimates and execute promptly all contracts intrusted to us. We solicit correspondence and shall cheerfully respond to any request for information not found herein.

Constant intelligent supervision, close attention to every detail of manufacture, knowledge of the characteristics of the different clays, only to be gained by years of study and experiment, have placed our product at the front, excelled by none and equaled by but few.

HENRY MAURER & SON.

BELOW WE GIVE A LIST OF SOME OF THE BUILDINGS WE HAVE SUPPLIED WITH OUR MATERIALS.

Office Buildings.

Empire Building	Broadway and Rector St., N. Y. C.
Washington Life Insurance Co	Broadway and Liberty St., "
Singer Building	Broadway and Liberty St., "
Office Building	12 to 16 John St., "
Office Building	Moore and Water Sts., "
American Surety Co	Pine Street and Broadway, "
Metropolitan Life Insurance Co	24th St. and Madison Ave., "
Johnson Building	Broad St. and Exchange Place, "
Manhattan Building—Addition	40 and 42 Wall St., "
"Beard" Building	120 and 122 Liberty St., "
Office Building	12th St. and Broadway, "
Bank of Commerce	Nassau and Cedar Sts., "
Townsend Building	25th St. and Broadway, "
New York Times Building	Park Row and Nassau St., "
Equitable Life Assurance Society	B'way, Pine, Nassau, and Cedar Sts., "
Gallatin National Bank	24 and 36 Wall St., "
Central Trust Co	54 Wall St., "
Chemical National Bank	B'way and Chambers St., "
Mercantile Exchange	Harrison and Hudson Sts., "
"Astor" Building	12 Wall St., "
"Tower"	50 Broadway, "
New York Produce Exchange	Broadway and Beaver St., "
"Mills" Building	Broad and Wall Sts., "
Manhattan National Bank	40 Wall St., "
Merchants " "	42 Wall St., "
"Mortimer" Building	Wall cor. New St., "
Eagle Insurance Building	Wall cor. Pearl St., "
"Astor" Building	Broadway near Wall St., "
Western Union Telegraph Building	Broad and Wall Sts., "
Western Union Telegraph Building	5th Ave. and 23d St., "
Continental National Bank	Nassau and Pine Sts., "
"Duncan" Building	11 Pine St., "
"White" "	Broadway and Franklin St., "
Central Safe Deposit Co's. Building	42d St. and 5th Ave., "
Gorham Mfg. Co's. Building	19th St. and Broadway, "
Commercial Union Insurance Building	Pine and William Sts., "
American Bank Note Co's. Building	Trinity Place, "
Potter Building	Nassau, Beekman, and Park Row, "
"Wilks" Building	Broad and Wall Sts., "
Farmers' Loan & Trust Co.'s Building	16 to 22 William St., "
Brown Brothers' Building	59 Wall St., "
Lancashire Insurance Co.'s Building	25 Pine St., "
London & Lancashire Insurance Co.'s Building	57 William St., "
Queen Insurance Co.'s Building	Wall St., "
Delmonico's Building	Beaver and William Sts., "

Office Buildings—Continued.

UNION BUILDING . . . . . Pine and William Sts., N. Y. C.
METROPOLITAN TEL. & T'PHONE CO.'S BUILDING.
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CENTRAL R. R. CO. OF N. J. BUILDING . . Liberty and West Sts., "
SUN FIRE INSURANCE CO.'S BUILDING . . . . . 54 Pine St., "
"MAIL & EXPRESS" BUILDING . . . . Broadway and Fulton Sts., "
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CONTINENTAL INS. CO. " . . . . . 44 Cedar St., "
ROOSEVELT " . . . . . 13th St. and Broadway, "
WALLACE " . . Cedar and Pine near Wm. St., "
CLARK " . . . . . 1 Park Row, "
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PROVIDENT LIFE AND TRUST CO . . . . . " " "
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NORTHWESTERN NATIONAL BANK . . . . . " " "
CHESTNUT ST. " " . . . . . " " "
WITHERSPOON . . . . . Juniper and Walnut Sts., " "
"BETZ" BUILDING. . . . . " "
READING TERMINAL STATION . . . . 12th and Market Sts., " "
TIMES ANNEX . . . . . 8th and Sansom Sts., " "
FIDELITY TRUST CO.'S BUILDING . 4th above Chestnut St., " "
GERMAN DEMOCRATIC CLUB . . . Chestnut above 6th St., " "
BANK OF NORTH AMERICA . . . " above 3d St., " "
LEHIGH VALLEY R. R. CO.'S BUILDING . . . . . Mauch Chunk, Pa.
OFFICE BUILDING . . . . . Scranton, Pa.
OFFICE " . . . . . Wilkesbarre, Pa.
NATIONAL SAFE DEPOSIT CO . . . . . Washington, D. C.
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BOSTON DAILY GLOBE . . . . . " "
GARDNER BUILDING . . . . . " "
BELL TELEPHONE CO.'S BUILDING. . . . . " "
"EAGLE" BUILDING . . . . . Brooklyn, N. Y.
NATIONAL CITY BANK . . . . . Fulton St., Brooklyn. N. Y.
N. Y. & N. J. TELEPHONE CO . . . . . Jersey City, N. J.
HUDSON COUNTY BANK . . . . . " " "
N. J. TITLE GUARANTEE CO . . . . . " " "
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Apartment Houses.

DON CARLOS APARTMENTS . . . . . 77th St. and Madison Ave., N. Y. C.
NAVARRO APARTMENTS . . . . . 59th St. and Central Park "
KNICKERBOCKER APARTMENTS . . . . . 28th and 5th Ave., "
APARTMENTS . . . . . 30th and Madison Ave., "
"RANDOLPH" " . . . . . 18th St. near 5th Ave., "

Apartment Houses—Continued.

Cumberland Apartments	. . . . . 22d St., and Broadway,	N. Y. C.
"Albert" "	. . . 11th St. and University Place,	"
Dalhousie "	. . . . . 59th St. near 5th Ave.,	"
"Tumbridge" "	. . . . W. 10th St. near 6th Ave.,	"
Apartments	. . . . . 66th St. and Park Ave.,	"
"	. . . . . 14th St. and Ave. C.,	"
"Grosvenor" "	. . . . . 10th St. and 5th Ave.,	"
Apartments	. . . . . 21st. and 8th Ave.,	"
"	. . . . . 58th St. near 6th Ave.,	"
"	. . . . 38th St. cor. Madison Ave.,	"
"Osborn" Apartments (addition)	. . . 57th St. and Broadway,	"
Apartments	. . . . . 97th St. near 9th Ave.,	"
"	. . . . . 246 to 250 W. 38th St.,	"
"Marie Antoinette"	. . . . . 66th St. and W. Boulevard,	"
Apartments	. . . . . 29 West 26th St.,	"

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Peter Doelger, Esq	. . . . . 100th St. and Riverside Drive,	"
Cyrus L. W. Eidlitz, Esq	. . . . . 86 St. " " "	"
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Residence ——— ———	. . . . . 72d St., near Madison Ave.,	"
C. P. Huntington, Esq.	. . . . . 57th St., cor. 5th Ave.,	"
Residence	. . . . . 79th St., near 9th Ave.,	"
Vanderbilt's Residence	. . . . .	Newport, R. I.
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Whitelaw Reid, Esq.	. . . . .	White Plains, N. Y.
Commodore Gerry	. . . . . 5th Ave., cor. 61st St.,	N. Y. C.
Isaac Stern, Esq.	. . . . . 858 5th Ave.,	"
Louis Stern, Esq.	. . . . . 993–995 5th Ave.,	"
H. R. Bishop, Esq.	. . . . . 881 5th Ave.,	"
Mrs. Josephine Schmid	. . . . . 5th Ave. and 62d St.,	"
Allen Wood, Esq	. . . . .	Woodmont, Pa.
John Wanamaker, Esq.	. . . . .	Ogontz, Pa.

Miscellaneous.

University Club	. . . . . 54th St. and 5th Ave.,	N. Y. C.
Manhattan Hotel	. . . . . 42d St. and Madison Ave.,	"
Bar Ass'n Building	. . . . . 43d and 44th Sts., near 5th Ave.,	"
N. Y. Wool Exchange	. . . . . Beach St. and W. Broadway,	"
Office Building	. . . . . Broadway and Howard St.	"
Howe's Bakery	. . . . . 83d St. and East River,	"
Mission Building	. . . . . 155 and 157 Worth St.,	"
Am. Litho. Co.'s Building	. . . . . 19th St. and 4th Ave ,	"

Miscellaneous—Continued.

Western Electric Co.'s Building	Bethune and West Sts., N. Y. C.
N. Y. City Postoffice Addition	"
Metropolitan Opera House	Broadway, 39th and 40th Sts., "
Brush Electric Light Co.	210 Elizabeth St., "
Manhattan Electric Light Co.	80th and 81st Sts., E.R., "
Western Electric Mfg. Co	Greenwich St., "
Manhattan Power Co.	25 Walker St., "
"Isabella" Home	190th St. and 10th Ave., "
Broadway Theater	41st St. and Broadway, "
Central Turn Verein	67th St., near 3d Ave., "
Belvidere Hotel	18th St. and 4th Ave., "
Garfield Safe Deposit Co.	23d St. and 6th Ave., "
Hotel "Vendome" (addition)	41st St. and Broadway, "
N. Y. Athletic Club House	55th St. and 6th Ave., "
Ocean Steamship Co.'s Pier	Foot Spring St., N. R., "
St. George's Clergy House	16th St., near 3d Ave., "
Eden Musee	23d St., near 6th Ave., "
Theological Institute	9th Ave. and 21st St., "
Plaza Hotel	59th St. and 5th Ave., "
Imperial Hotel	Broadway and 32d St., "
Buckingham Hotel (addition)	5th Ave. and 59th St., "
Madison Square Garden Buildings,	26th and 27th Sts. and Madison Ave., "
West Side Bank	34th St. and 8th Ave., "
North River Savings Bank	34th St., near 8th Ave., "
German Club	59th St., near 6th Ave., "
Catholic Club	59th St., near 6th Ave., "
Racquet Club	43d St., near 5th Ave., "
Roman Catholic Orphan Asylum (addition)	51st St. and 4th Ave., "
Christ's Church	71st St. and Boulevard, "
"Judson" Memorial	4th St. and Washington Sq., "
American Biscuit & Mfg. Co	West and Bethune Sts., "
"Home"	63d St., near 11th Ave., "
Half Orphan Asylum	104th St. and West End Ave., "
"San Remo" Hotel	74th and 75th Sts., and 8th Ave., "
New York Hygeia Ice Co.	52d St. and East River, "
R. H. Macy & Co. (new store)	13th St. and 6th Ave., "
Harlem Court House	121st St., near Lexington Ave., "
Fifth Ave. Transportation Co.'s Stables	88th St., "
F. & M. Schaefer Brewing Co.'s Stables	51st St. and 4th Ave., "
Methodist Episcopal Church	76th St., near 9th Ave., "
Staten Island R. R. Co.	South Ferry, "
Schwartzchild & Sultzberger Ref. Co.	44th St. and 1st Ave., "
Chas. Broadway Rouss Building	551 Broadway, "
Jermyn Hotel	Scranton, Pa.
"Pottsville Daily Republican" Building	Pottsville, Pa.
Court House and City Hall	Rome, N. Y.
Citizens' Bank Building	Savannah, Ga.
Normal School Building	Providence, R. I.
Yale Law School Building	New Haven, Conn.
Miners' Savings Bank Building	Pittston, Pa.
Riverhead County Building	Riverhead, N. Y.
Essex County Jail	Newark, N. J.
Essex County Insane Asylum	Verona, N. J.
County Clerk's Office	Norwich, N. Y.

Miscellaneous—Continued.

Government Building	Washington, D. C.
Edison Electric Light Co.	908 Samson St., Phila., Penn.
Tampa Bay Hotel	Tampa, Florida.
Central R. R. of New Jersey (Depot)	Jersey City, N. J.
Dickinson Library	Carlisle, Pa.
Pittsburg Jail	Pittsburg, "
First National Bank	Frankfort, "
" " "	Pittsburg, "
"Milliken" House	Boston, Mass.
Church of the Redemptionist Fathers	" "
Schmidt & Friday's Buildings	Pittsburg, Pa.
Summit Bank	Summit, N. J.
Barbour Flax Spinning Co.	Paterson, N. J.
N. Y. State Lunatic Asylum (addition)	Utica, N. Y.
Atheneum Building	Boston, Mass.
Keystone National Bank	Philadelphia, Pa.
Court House	Jamaica, L. I.
Court House	Pottsville, Pa.
Blairstown Seminary	Blairstown, N. J.
Colgate Library	Hamilton, N. Y.
Chesebrough Building	Brooklyn, N. Y.
Court House	West Chester, Pa.
House of Refuge	Glen Mills, Pa.
Baltimore & Ohio R. R. Tunnel	Philadelphia, Pa.
Rhode Island Hospital	Providence, R. I.
Water Works	Baldwins, L. I.
Girley Memorial Hall	Troy, N. Y.
Bromley's Factory	Front and Lehigh Ave., Philadelphia, Pa.
College of Pharmacy	10th above Cherry St., " "
Warden Mill	19th and Allegheny Ave., " "
Academy of National Science	19th and Race Sts., " "
People's Electric Power House	Front and Fairmont Ave., " "
Printing House	4th and Arch Sts., " "
Stetson's Hat Factory	4th and Montgomery Ave., " "
Stores	Market and 17th Sts., " "
U. S. Postoffice	York, Pa.
Church	Scarborough, N. Y.
St. John's Parochial School	Orange, N. J.
Russell Sage Memorial	Troy, N. Y.
Bowery Savings Bank	Grand and Elizabeth Sts., N. Y. C.
Twelfth Ward Savings Bank	125th St. and Lexington Ave., "
Metropolitan Club	60th St. and 5th Ave., "
R. H. Macy & Co. (3d addition)	13th St., near 6th Ave., "
Presbyterian Mission	63d St. and 1st Ave., "
House of Relief	Jay and Hudson Sts., "
Third Avenue Cable R. R.	65th St. and 2d Ave., "
" "	Bowery and Bayard St., "
W. D. Sloane's Stable	55th St., near 6th Ave., "
Buckingham Hotel (2d addition)	5th Ave., near 50th St., "
Lincoln Safe Deposit (addition)	42d St., near 4th Ave., "
College of Physicians and Surgeons	68th St. and West Boulevard, "
Museum of Natural History (addition)	Central Park, "
Carnegie Music Hall (addition)	56th St. and 7th Ave., "
Park & Tilford's Store	Columbus Ave., cor. 72d St., "
McCadden Memorial	Brooklyn, N. Y.

Hospitals.

Mount Sinai	66th St. and Lexington Ave., N. Y. C.
Saint Vincent	12th St., near 7th Ave., "
New York Eye and Ear Infirmary	13th St. and 2d Ave., "
St. Timothy Infirmary	Roxbury, Pa.
Methodist Episcopal	Brooklyn, N. Y.
Girard College Infirmary	Philadelphia, Pa.
Wistar Institute	" "
Ruptured and Crippled Hospital	42d St. and Lexington Ave., N. Y. C.
Hospital	16th St. and E. R., "
German Hospital (addition)	66th St., near 4th Ave., "
Bellevue " "	26th St. and 1st Ave., "
Presbyterian Hospital (add'n)	70th, 71st Sts., near Madison Ave., "
Hospital	59th St., near Lexington Ave., "
Presbyterian Hospital (2d and 3d additions)	70th and 71st Sts., "
New York Hospital (addition)	15th St., near 5th Ave., "
French Hospital (addition)	34th St., near 9th Ave., "
Women's Hospital	15th St. and Livingston Place, "
Presbyterian Hospital	Philadelphia, Pa.
Methodist Episcopal Hospital	" "
Willseye Hospital	Race St., below 16th St., " "

Breweries.

George Ehret	93d St., near 3d Ave., N. Y. C.
James Everard	133d St., near Madison Ave., "
Beadleston & Woerz	W. 10th and Washington Sts., "
John Eichler	169th St. and 3d Ave., "
Schaefer Brewing Co.	51st St. and 4th Ave., "
Bernheimer & Schmidt	109th St. and 9th Ave., "
Bergner & Engel	Philadelphia, Pa.
Germania Brewing Co.	" "
Consumers' Brewing Co.	Lowell, Mass.

Warehouses.

"Hatch" Building	402 and 404 Greenwich St., N. Y. C.
Warehouse	123d St. and 3d Ave., "
"	4th St. and Lafayette Place, "
"	343 Broadway, "
"	691 " "
"	Greene St., near Bleecker St., "
"	737 Broadway, "
"	806 " "
Lincoln Safe Deposit Co.	41st St., near 4th Ave., "
Manhattan Storage Warehouse Co.	62d St. and 7th Ave., "
Columbia Storage Warehouse	149 and 151 Columbus Ave., "
Warehouse	200 Greene St., "
"	Cor. Bleecker and Wooster Sts., "
"	Waverly Place and Mercer St., "
"	15 Lafayette Place, "
"	4th and Mercer Sts., "
"	Leonard and W. Broadway, "

And numerous others in various parts of the U. S.

REGARDING OUR ABILITY TO EXECUTE CONTRACTS PROMPTLY AND SATISFACTORILY, WE REFER WITH PLEASURE TO THE FOLLOWING GENTLEMEN, WANT OF SPACE ONLY PREVENTING US FROM MENTIONING THE MANY OTHER FRIENDS TO WHOM WE ARE INDEBTED:

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James Barnes Baker	156 5th Ave., N. Y. C.
Richard Berger	309 B'way, "
F. Baylies	51 Bible House, "
W. E. Bloodgood	64 Cedar St., "
Babb, Cook & Willard	874 B'way, "
Carrère & Hastings	44–46 B'way, "
Cady, Berg & See	31 E. 17th St., "
Clinton & Russell	32 Nassau St., "
Cope & Stewardson	Philadelphia, Pa.
De Lemos & Cordes	Fulton and Nassau Sts., N. Y. C.
R. L. Daus	Brooklyn, N. Y.
John A. Duckworth	Scranton, Pa.
C. L. W. Eidlitz	1123 Broadway, N. Y. C.
H. J. Hardenbergh	10 W. 23d St., "
L. C. Holden	3 Union Sq., "
Howard & Cauldwell	12 E. 23d St., "
Harney & Purdy	35 Nassau St., "
Jos. M. Houston	Philadelphia, Pa.
G. W. & W. D. Hewitt	" "
Addison Hutton	" "
Kimball & Thompson	66 B'way, N. Y. C.
Herman Kreitler	62 Broad St., "
McKim, Mead & White	160 5th Ave., "
M. C. Merritt	1267 B'way, "
F. A. Minuth	822 B'way, "
R. Maynicke	725 B'way, "
Geo. L. Morse	Brooklyn, N. Y.

Architects—Continued.

GEO. B. POST . . . . . 33 E. 17th St., N. Y. C.
BRUCE PRICE . . . . . 150 5th Ave., "
J. G. PERRY . . . . . Albany, N. Y.

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R. H. ROBERTSON . . . . . 160 5th Ave., N. Y. C.
RENWICK, ASPINWALL & OWENS . . . . . 367 5th Ave., "

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W. WHEELER SMITH . . . . . 7 Wall St., "
SCHICKEL & DITMARS . . . . . 111 5th Ave., "

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THOM & WILSON . . . . . 111 5th Ave., "

WITHERS & DICKSON . . . . . 54 Bible House, "
A. C. WAGNER . . . . . Philadelphia, Pa.
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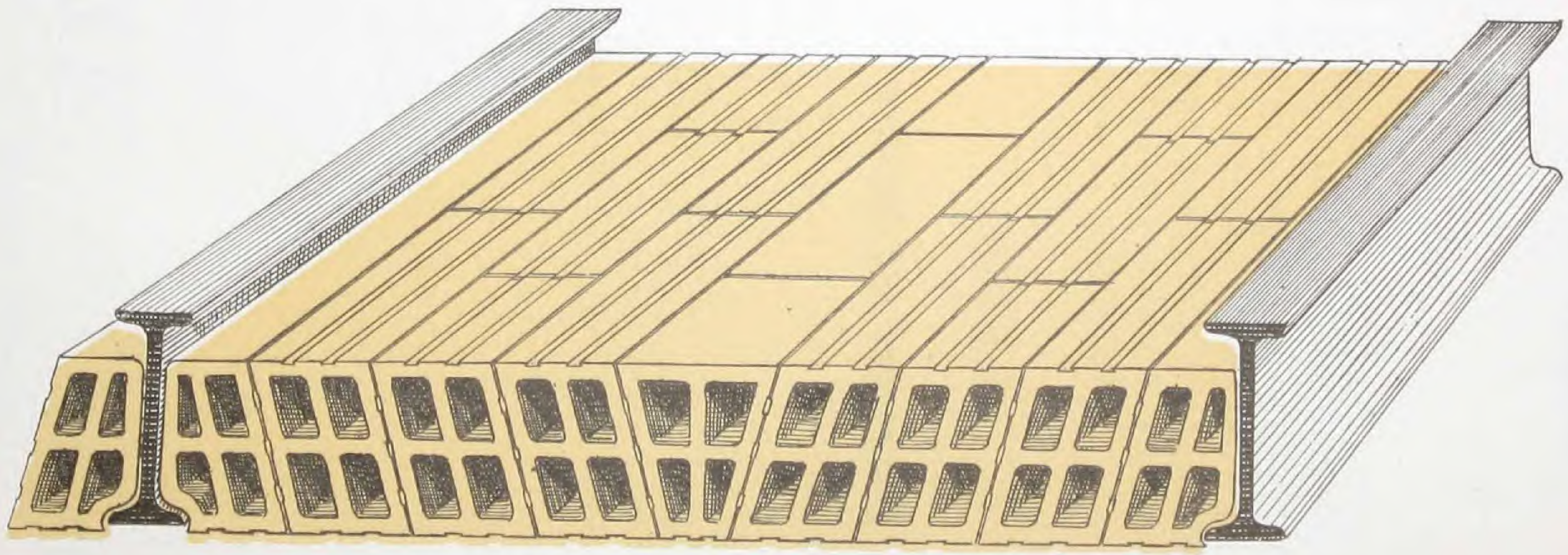
AND MANY OTHERS.

Hollow Brick for Flat Arches.

BETWEEN IRON BEAMS FOR FLOORS



STOCK SIZES.

DEPTH, 6 x 6 x 12 inches.
" 7 x 6 x 12 "
" 8 x 8 x 12 "

DEPTH, 9 x 8 x 12 inches.
" 10 x 8 x 12 "
" 12 x 8 x 12 "

Hollow Brick for Flat Arches,

FOR FLOORS AND CEILINGS.

THE Brick for the arches are made of hard burnt fire clay and porous terra cotta material, hollow, of equal vertical thicknesses, and laid in place in cement mortar, to "break joints" alternately. The number of brick to form an arch will vary according to size or distance between the iron beams in which they are to be laid; the two outer bricks are called "skew backs" and are made with a shoulder so formed as to fit the flange of the beam and drop about ¾ inch below its soffit, to allow for an extra thickness of plaster as a protection to the under side of the beam (except where the beam is entirely protected as shown, on page 16). The center brick is the "key," and the "intermediate" brick are so placed that the whole mass, when laid, will form a self-supporting flat arch. All the brick are "dove-tailed" or grooved before being burned, in order to afford a rough surface for plastering, which is applied directly on the bottom of the arch. The mode of setting these brick is as follows: A flat center made of two-inch planking, being supported by 4 x 4 joists, is hung to the iron beam by means of hooks hanging below the bottom flange of the beams at a proper level. After the arch is formed, giving sufficient time for the mortar to set, the centers can be let down and removed to other places for further use.

Among some of the numerous and also great advantages possessed, the following can be mentioned:

At one operation it provides a ceiling and a floor, and in the shortest possible space of time. It is all dry in a few days and does not hinder the rapid completion of the building, and its delivery in good condition.

The arches can be made of any depth up to about 15 inches, and thus fill the entire depth of the beams, reducing the concrete filling on top to a minimum, thereby reducing the weight of floors and in many cases the cost of the work.

Strength and elasticity to resist sudden impact.

Rat and vermin proof.

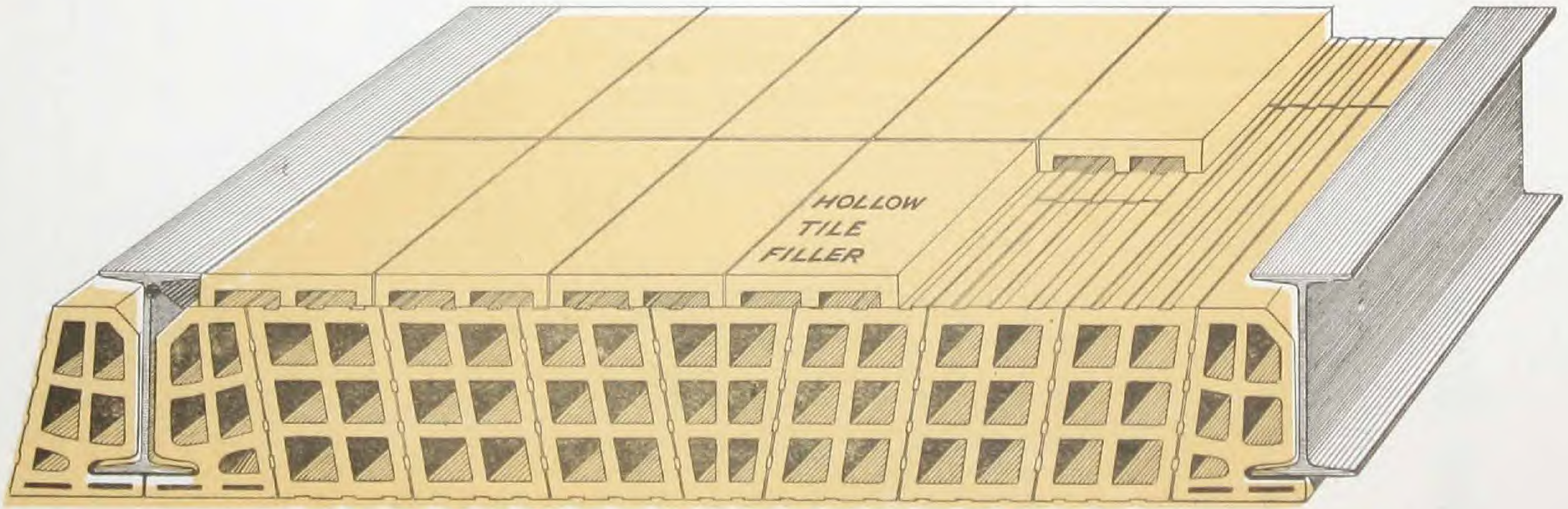
Freedom from the unsightly cracks observed in floors constructed of materials affected by changes of temperature.

A room constructed of above-mentioned arches, and partitions of same material, is entirely fire-proof.

Hollow Brick for Flat Arches.

Between Iron Beams.

Showing the Protection of Beams on "Skew-Back," or End Brick. (Patented.)



For Sizes see Page 14.

Hollow Brick for Flat Arches.

(IRON BEAM PROTECTION.)

THIS form of an arch for floors and ceilings of buildings is virtually the same as shown on page 14, with the exception that the iron beam is thoroughly protected (as shown on cut opposite) by the "Skew Back" or end brick, covering bottom flange of beam in such a manner that no iron is exposed whatsoever. It not only has the advantage of protecting the iron beams, but also the plastering, keeping latter from rust stains, which sometimes appear when beams are not protected in this manner. In setting this arch the wooden center is let down sufficiently to allow the flange on brick to go under and cover the beam.

It has been used largely and given thorough satisfaction.

We are the originators of this idea, for which we hold a patent. Numerous other so-called "beam protections" have been placed on the market by others, and in many cases have proved worthless on account of the large percentage of breakage occasioned.

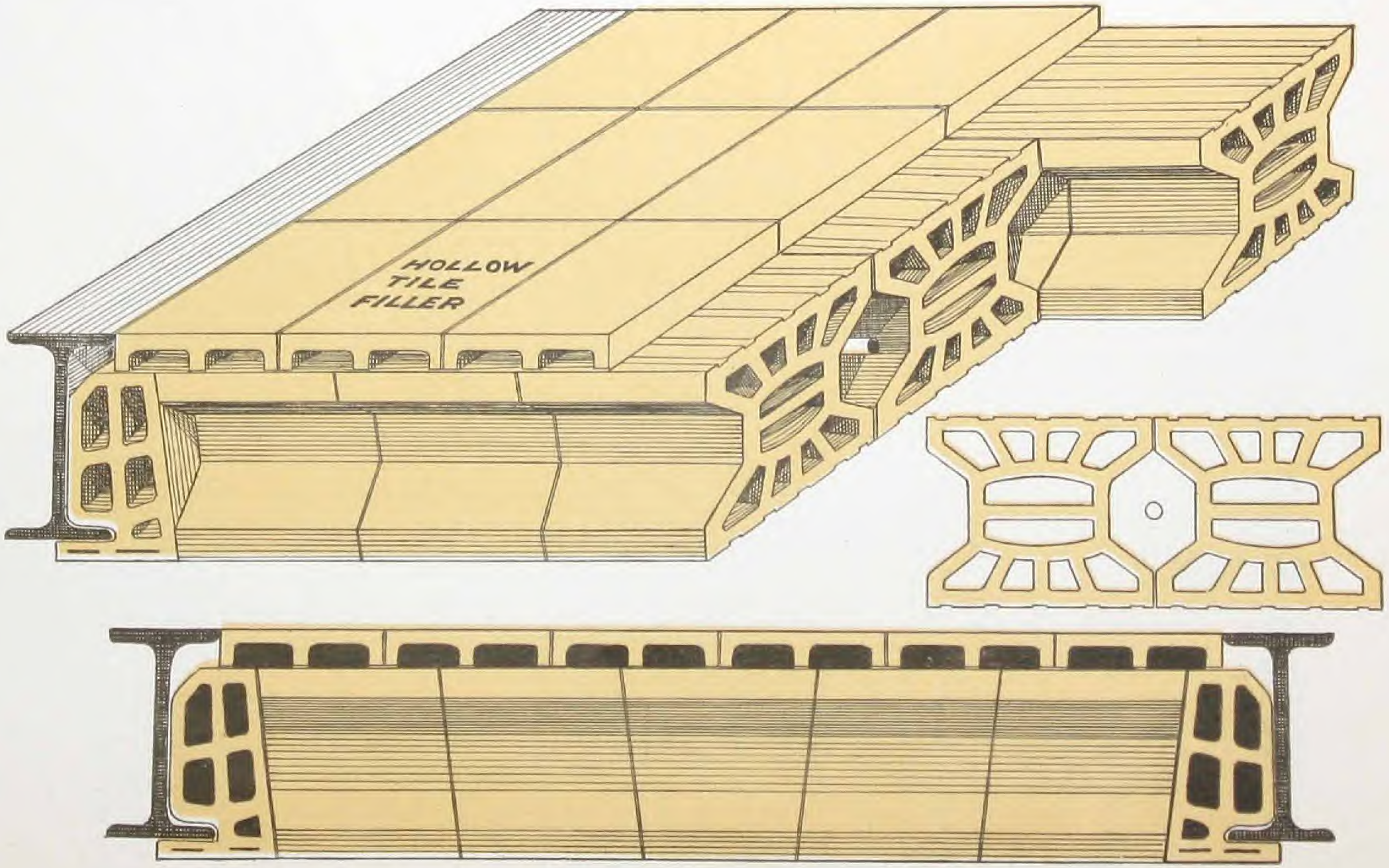
We claim strength and durability, having the hollow spaces in "protection" on bottom flange all made in one piece on "Skew Back."

Infringers of this patent severely dealt with.

On page 25 of this catalogue we recommend greater depth of arch; to meet occasions where this is not practicable we make a filler of porous terra cotta (see cut opposite) of different sizes to fill up to top of beam, in place of concrete. This not only materially reduces the weight of floor, but is a saving in cost of labor and time.

"Excelsior" End-construction Flat Arch.

PATENTED JULY 21, 1891.



STOCK SIZES.

DEPTH, 8 x 12 x 12 inches.
" 9 x 12 x 12 "
DEPTH, 18 x 12 x 12 inches.
" 12 x 12 x 12 "

"Excelsior" End-construction Flat Arch.

(PATENTED.)

THE genius of American progress never turns backward, but constantly evolves new and better things, leaving the old to be relegated to the shadows of obscurity. The wise man investigates and proves all things, welcoming whatever is good, and rejecting nothing on account of its mere newness, but helping onward and upward the march of civilization and humanity, while securing for himself the benefit of each fresh advance.

Our "Excelsior" End-construction Flat Arch, which we have ntroduced in this market during the past three years, has received the indorsement of the leading architects and builders, and is without question the best system of fireproofing ever presented to the building trade. When we say this arch is 25 per cent. lighter and stronger than the old style Flat Arch with the hollow spaces running parallel with the beams, we have the facts and proofs to bear out our statement. Besides lightness and strength, there is a large saving in the constructive iron work, as the distance between the iron beams can be increased; the blocks are so made that they can be adapted to any span up to ten feet, according to the depth of the block used, thereby reducing by many hundred tons the weight which the foundations have been obliged to carry under the old method.

More than five million feet have been used in the largest and finest buildings in this city and elsewhere. It has been thoroughly tried and "not found wanting" in any particular.

The advantages we have presented in favor of the Excelsior End-ccnstruction Flat Arch are numerous and worthy the consideration of both architect and builder. We call your attention to cut opposite, also to test of strength on page 21.

The setting or erecting of this arch is the same as the "old style" or side-construction arch excepting that the blocks run across between beams, end-way, instead of with beams. It can be erected as cheaply as arches of any type heretofore used.

When these blocks are joined to form the arch, a space is created of 5 in. clear, which, while reducing the weight of arch, also permits of variations of tie-rods; avoids cutting of blocks (and risk of breakage), always necessary when other methods of end-construction are employed.

We call your particular attention to weights of this arch in comparison to "old style" arches on page 58.

TEST MADE OF THE "EXCELSIOR" END-CONSTRUCTION PLAT ARCH.

February 26, 1894.

"Excelsior" End-construction Flat Arch Test.

MADE FEBRUARY 26, 1894.

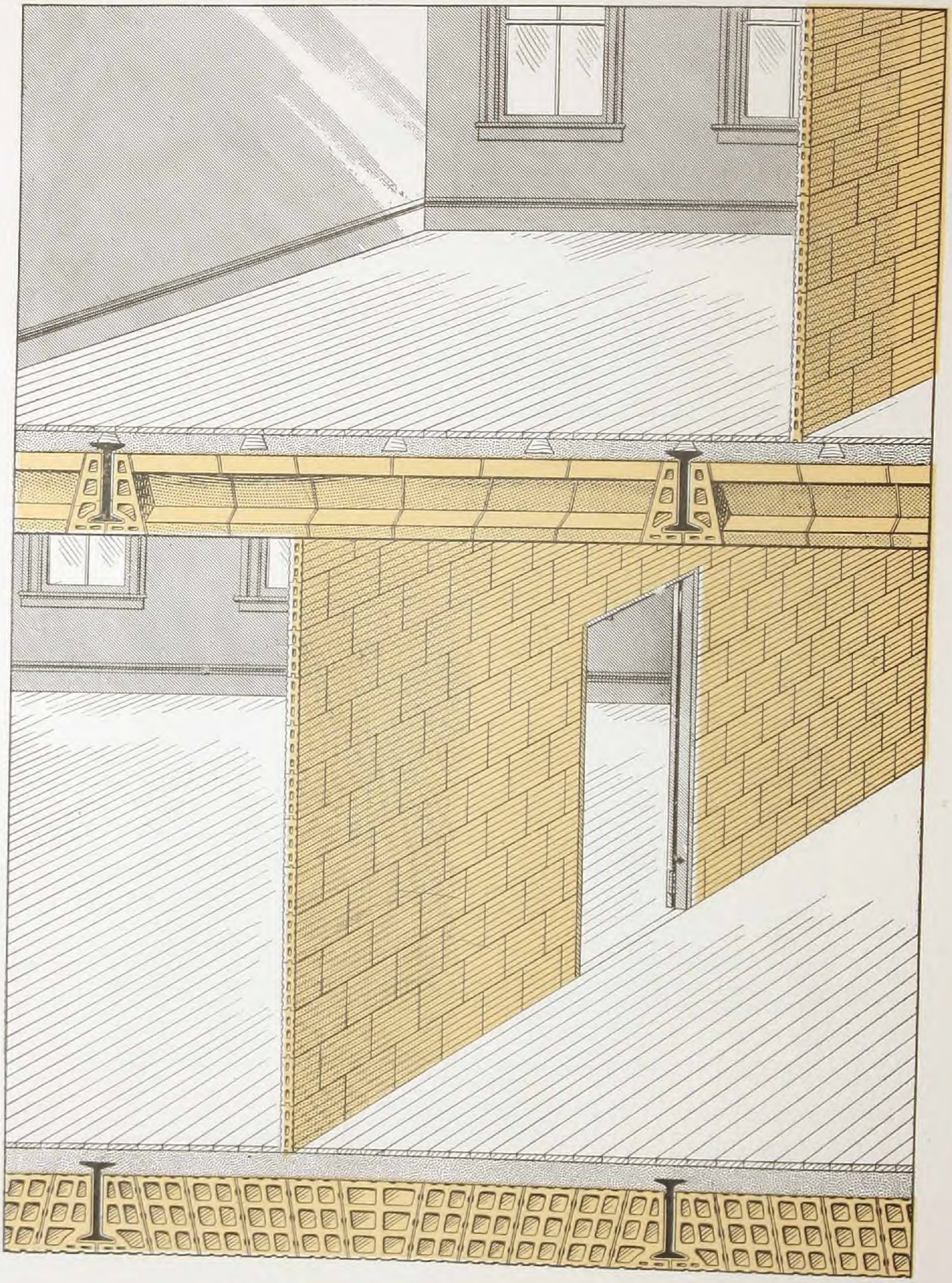
WE have only to call your attention to the cut on opposite page to give you a comprehensive idea of the strength of an "Excelsior" End-construction Arch. This Arch, the span being 8 feet wide, 5 feet in length, and 8 inches deep —equal to 40 square feet of surface, carried the enormous weight of 50,000 pounds and showed no deflection. Bear in mind also that this Arch is 25 per cent. lighter than any other system. We feel justly proud in being able to show such satisfactory results.

We have made recent other tests weighted with sand, a 10-inch deep arch, spanning 10 feet between beams, sustaining the enormous weight of over 1,000 pounds to the square foot. Copies of above tests will be cheerfully furnished upon application.

In an interview with Mr. Bruce Price, a leading architect, published in *The Brickbuilder*, of January 20, 1897, referring to our 10-inch "Excelsior" End-construction Arch, which was used in the construction of the American Surety Building, erected from his plans, he states: "After the floor blocks were set in place, blocks of granite, weighing as much as five to eight tons, were dumped on the archings and worked over before being set, without the slightest damage to the construction."

Surely the most skeptical cannot fail to be convinced.

Rooms showing "Excelsior" and



"Side"-construction Flat Arches.

Tests.

There has been considerable stress laid during the past year upon various tests of different methods of fireproof construction made here. These, *per se*, are of some benefit, but as Mr. F. C. Moore, of the New York Board of Fire Underwriters, says (see *Engineering News*, August 5, 1897): "They have not been official tests, but made by private parties," and he further states his observation "that the materials, concrete, etc., are prepared for tests with much greater care than for installation in buildings."

As far back as December 20, 1890, tests were made which precluded every suspicion of unfairness, and they were brought about as follows: Two rival manufacturers of Terra Cotta material were competing for a large contract in Denver, Col.; the one made *dense* tile of the *side*-construction method, the other *porous* tile, *end*-construction method, and to settle the question of relative superiority, agreed to submit their methods and material to various tests under conditions far exceeding in severity any of those lately made. These tests were made under the supervision of three leading architects, Messrs. Andrews, Jaques, and Rantoul, a full report thereof appearing in the *American Architect and Building News* of March, 1891, and also in "Kidder's Architect and Builders' Pocket Book," 1895 edition, but as both of these publications circulate among the trade chiefly, we give the report in full for the benefit of those interested in the subject of fireproofing, without being immediately engaged therein.

REPORT OF DENVER TESTS.

EIGHT Arches of Hollow Burned Fire Clay Tile, carried on 10-in. Steel I-beams, set 5 ft. apart on centers, were built (some of them being of dense tile side-construction, and others porous tile end-construction), and under the same conditions as nearly as possible, subjected to following tests:

1st. By Still Load, Increased until the Arches were Destroyed,

One of the dense tile arches broke at 5,429 lbs., or 271 lbs. per sq. ft. and the other of like material, broke at 8,574 lbs., or 428 lbs. per sq. ft., both of these arches having but one horizontal web at the center of the tile. Both of them gave way suddenly, the entire arch falling down, due in both cases to the failure of the skew-backs; the remainder of the arch being uninjured.

The porous terra cotta end-construction arches, with two horizontal webs, sustained a load of 15,145 lbs., or 757 lbs. per sq. ft. for two hours without breaking, when the load was discontinued.

2d. By Shocks, Repeated until Arches were Destroyed,

This was made by dropping a piece of timber 12 in. square and 4 ft. long, weighing 134 lbs., from a height of 6 ft., upon the middle of the arch.

Both of the dense tile arches broke at the first blow of the ram, the arches breaking "like a sheet of glass, indicating extreme brittleness."

The porous terra cotta arch withstood four blows from a height of 6 ft., and seven blows from a height of 8 ft., the arch dropping at the last blow.

3d. By Fire and Water, alternately, until Arches were Destroyed,

☞ One of the dense tile arches was destroyed by three applications of the water; the other withstood fourteen applications of the water, alternating with extreme heat.

The porous tile arch withstood eleven applications of water, alternating with extreme heat uninjured. The temperature of the tile at the time the water was applied varied from 1,300° to 1,600° F.

4th. By Continuous Fire of High Heat, Until Arches were Destroyed,

Both the dense tile arches were destroyed after being subjected to a most intense heat for twenty-four hours.

The porous tile arch, after having a continuous fire under it for twenty-four hours, was practically uninjured, as it afterward supported a weight of bricks of 12,500 lbs., on a space 3 ft. wide in the middle of the arch.

The weight of the arches tested above was:

Porous; new and dry	34	lbs. per sq. ft.
Dense; the one which stood tests the best	40⅞	" " "
And the other	32	" " "

The lessons acquired from the foregoing are: that porous terra cotta is practically indestructible by either fire or water; that the end-construction method, when made of porous material, is capable of sustaining over treble the weight of side-construction dense tile.

Profiting by that experience we have since made all our Hollow Tile more or less porous. Nearly six years after those tests were made we find exemplified again the lessons then taught us, further strengthened by the fact that in this instance the conditions were such as would be found in the ordinary fireproof construction.

On May 3, 1897, a disastrous conflagration occurred in Pittsburg, Pa., of which at public request, we issued a report, copy of which we now give; and in order to forestall all question as to its fairness we refer to reports published in the New York *Journal of Commerce*, Tuesday, May 18, 1897, by Mr. S. H. Lockett, an expert connected with the Continental Insurance Co.; *Engineering News*, No. 20, pages 313, 316, 318, and *Engineering Record* of about the same date, and finally to the report of Mr. S. Albert Reed, Manager, addressed to the Executive Committee of the New York Tariff Association.

PITTSBURG FIRE, MAY 3, 1897.

MODERN fireproofing systems have never before been subjected to so severe a test; the rapid progress and the intensity of the fire being especially evident.

The situation of the buildings on which we report was as follows:

THE JENKINS GROCERY STORE, fronting north on Penn avenue, south on Liberty street and an alley, and easterly on Cecil alley.

THE DURBIN HORNE OFFICE BUILDING, to which we shall refer as "the office," situated directly opposite the "Jenkins," on Penn avenue, easterly on Cecil alley.

THE JOSEPH HORNE & CO.'S DRYGOODS STORE, referred to hereafter as "the store," facing south on Penn avenue and westerly on Fifth street, also opposite the "Jenkins." Between the office and store was a private dwelling, of which not a vestige remains.

THE METHODIST BOOK CO.'S OFFICE BUILDING, fronting north on Penn avenue, westerly on Cecil alley, and the Phipps structure, facing south on Penn avenue, opposite the Methodist Book Co.'s office, and westerly on Cecil alley.

WIND ABOUT SOUTHEAST.

The fire started in the "Jenkins," a warehouse of the so-called "slow-burning" type, filled with highly combustible material, such as oil, lard, hams, sugar, wooden-ware, etc. The walls were of brick and the floors of

wood—flooring and stringers; on the alley and Cecil alley sides the windows were protected by iron shutters.

This building and its contents were totally destroyed; only a few fragments of the outer walls remain standing.

The Methodist Book Co.'s building, on the opposite side of Cecil alley, about sixty feet from the "Jenkins," was constructed of 9-inch concrete arches of the old "Iron Economy" system, *i.e.*, suspended wire with pipe-iron filled in with cement and slag. This building was protected by the direction of the wind, namely, toward the northwest, and by the iron shutters on the windows of the "Jenkins" facing it on Cecil alley, and by a small hollow tile fireproof one-story building, used as a storehouse for cars, situated between it and Cecil alley. This car-house is totally uninjured.

The fire entered through the windows of the offices on Cecil alley side; the top floor, occupied as an office by Architect Bickels, was burned out completely, and the floor below that, almost so. The 9-inch concrete arches deflected several inches, and are now being held up solely by the wire-cloth and pipe-iron, and are condemned. The metal-lath partitions between the different offices on the sixth, seventh, and eighth floors were burned through, and offered no protection whatever.

The Phipps Building, of Porous Terra Cotta End-construction, opposite the Book Co.'s office, on Penn avenue, was also protected by the direction in which the wind blew, and, beyond a severe scorching, is little damaged.

The Horne offices, directly opposite the "Jenkins," on Penn Avenue, was constructed of 15-in. I-beams, with 8-in. raised End-construction Porous Terra Cotta Arches, having a covering of 3-in. concrete (less concrete and deeper arches would have been far better, as the concrete is now one mass of rubbish, having lost all its adhesiveness to the tile). The interior was partitioned off by 4-in. terra cotta, built, however, on wooden strips 4-in. by 2-in, a very reprehensible method, and one, we regret to say, still in vogue, and was the cause of the partitions falling down when the strips burned down under them. The entire front, however, had no further protection than that furnished by large plate-glass windows; no safeguard whatever against flames from across the street. It was tenanted as follows: On first floor by a drug, a carpet, a millinery, and a china store, and the entranceway; on second, third, and fourth floors by doctors' offices, dress-making and millinery establishments, and a photographic gallery.

This structure stands to-day in good condition, not an arch being sagged, and but few of the soffit tiles down; will require but little repair. The walls and steel-work are in good shape.

The Horne Store was of similar construction to the office building with this exception: the 9-in. Arches were of Hard Burned Terra Cotta Side-construction (instead of Porous End-construction). The floors were not partitioned off, so that each floor opening to the other through a large light-shaft and several smaller vertical openings, when filled with combustible material, formed an immense furnace. The front of this building was one mass of plate-glass, unprotected by iron shutters, and gave early entrance to the flames from across Penn Avenue, almost simultaneously on all six floors. On the roof there had been constructed a large iron tank resting on wooden beams; of course when these burned through the tank went crashing through the floors, tearing a large hole through the ceiling and dislodging many of the adjacent tiles; had this not occurred each floor of the iron would have been intact. It was also apparent here that the concrete filling on top of the arches was pretty well disintegrated. Without going into general details as to the condition of the columns, the general results show the necessity of a thorough protection, through terra cotta, for them. This building actually was subjected to the severest trial of all, having not only to stand the intense heat generated by its own combustion of inflam-

mable material, but also the additional flames of the adjoining private brick dwelling and the office building which caught first, and the heat and flames from the "Jenkins."

At first sight this structure looks like a total wreck, but we understand that nearly two complete walls will be saved, also parts of the other two. The steel had been thoroughly protected by the fireproofing and probably 75 per cent. of it will be saved. All that will be necessary is to remove the fireproofing, repaint the steel and replace the Arches, except as to those damaged by the iron tank in its course through the building.

A photograph showing the present appearance of the Horne Building in Pittsburg, taken a few days ago, is reproduced in to-day's *Insurance Press*. After an expenditure of approximately $20,000 on the steel frame of this building, it is ready to be again inclosed in brick, tile, and mortar. The exposed walls shown in the picture will be used. The Horne Building, as originally constructed, cost $368,000. In the steel skeleton alone the fire underwriters reaped a salvage of $161,000. A committee of engineers, in passing upon the loss, reported that the damage to the steel frame would not have exceeded 5 per cent. had not a tank weighing more than 50,000 pounds fallen through the building because it was not properly supported.

While on the subject of tests, we would state that we erected a furnace 16 x 12 x 9 ft. for the purpose of experimental tests. The walls were 12 in. thick, 8 in. ordinary brick, lined 4 in. with fire-brick, ceiling of 10-in. porous hollow tile, beam-protecting skew-backs end-construction. Beams: 3 10-in. I-beams, 5 ft. apart, protected beneath by the skew-back 1½ in., imbedded in the end walls. Fireplace, 4 ft. wide by 6 ft. long, arranged in door of structure; distance between grate-bars and ceiling, 5 ft. 6 in. Loopholes in six different places; three of them immediately under the arch. Opposite each hole thermometers (Seger cones) were inserted in order to ascertain exactly the temperature during firing. On April 11, and continued until April 14, a slow fire was kept up for drying, and on the 14th of April, at 1 o'clock P. M. sharp firing was started, and kept up until morning of April 15, at 7.10 o'clock and with soft coal, until 2 P.M., a period of 25 hours. At that hour water was turned on, directed straight under the arch through a 2½-in. hose from hydrant under 60 pounds pressure, and maintained for twenty minutes.

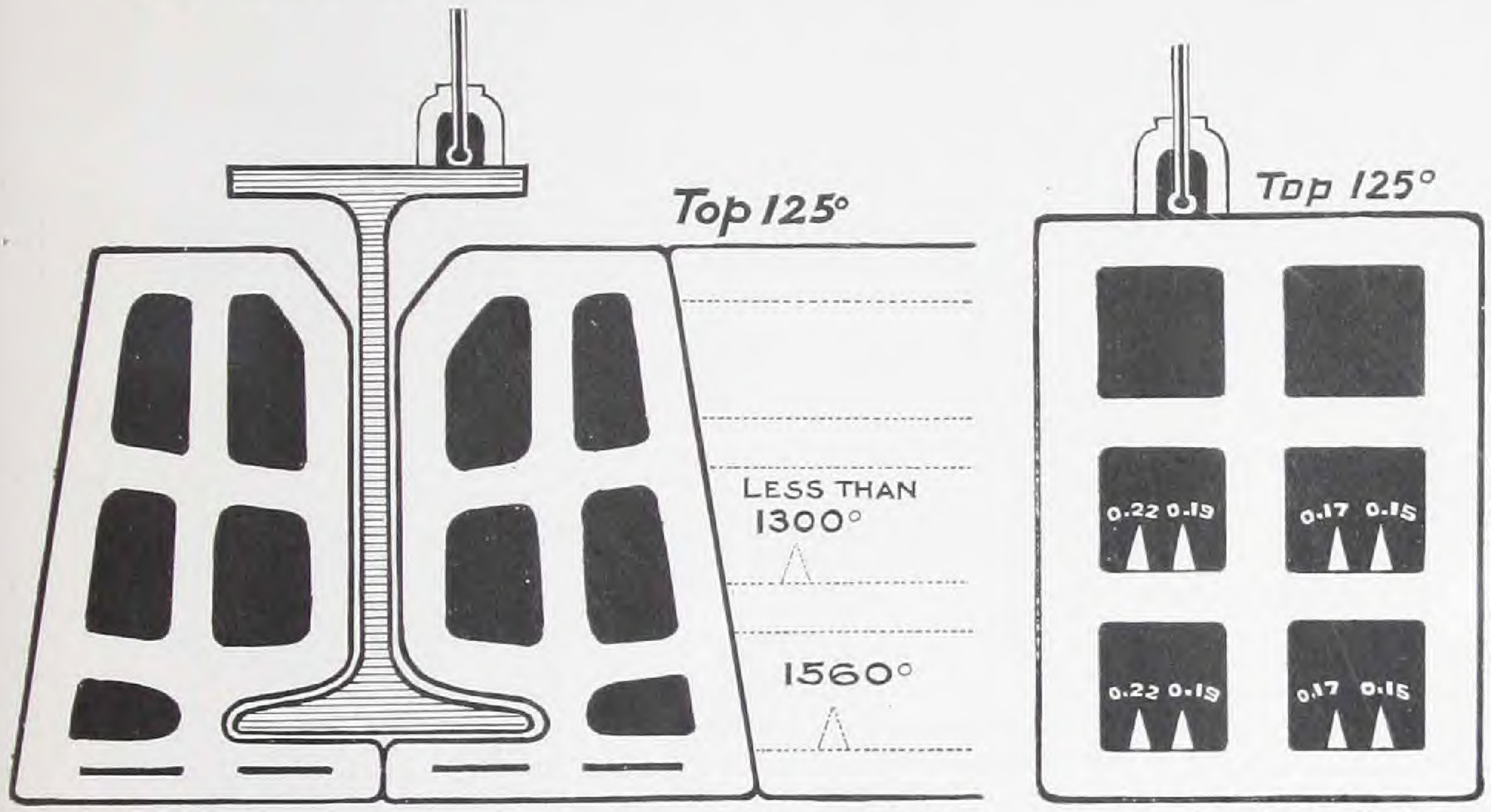
Table of temperature during soft-coal firing, April 15:

	SEGER CONES.	FAHREN.	CELSIUS.
	No. 0.22	1310°	710°
At 9 o'clock A. M., cones	" 0.19	1418°	770°
No. 0.22, 0.19, 0.17 gone.	" 0.17	1490°	810°
At 11 o'clock A. M., cones	" 0.15	1562°	850°
No. 0.15, 0.11 gone.	" 0.11	1706°	930°
At 1 o'clock P. M., cones	" 0. 7	1850°	1010°
0.7, 0.5 gone.	" 0. 5	1922°	1050°
At 2 o'clock P. M., No.			
0.1 all gone and cone No.	" 0. 1	2066°	1130°
0.2 half gone.	" 0. 2	2154°	1170°

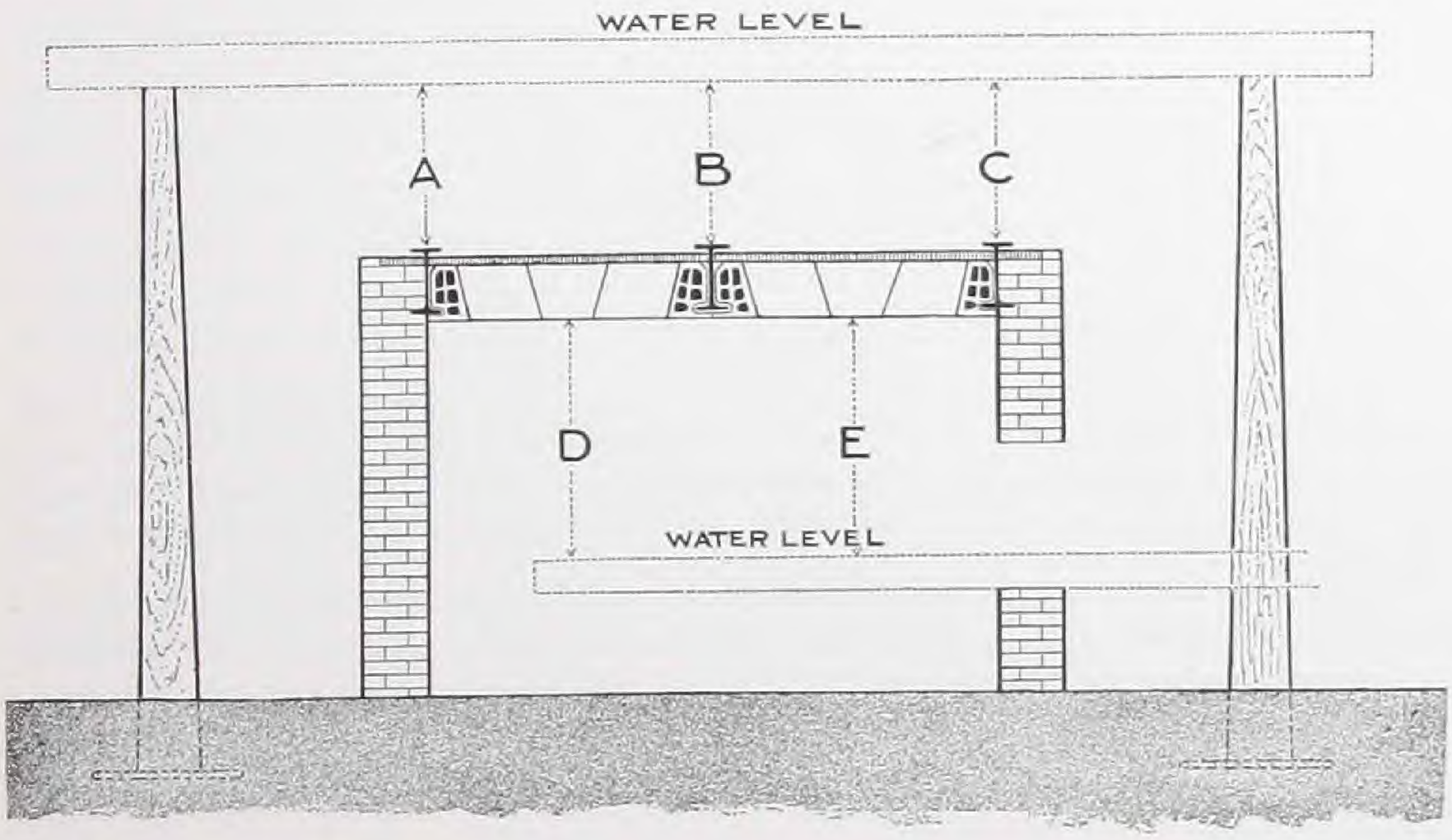
At this hour (2 P. M.) the fire-brick lining the walls were red hot through their entire depth of 4 inches, easily observed through the loopholes; thus proving how the gradually growing heat had penetrated the walls and ceiling. The under parts of the hollow arch were red-hot throughout the extension of the arches.

To obtain the temperature inside the ceiling, two Seger cones No. 0.22 and 0.19 were placed inside of the arch in two different places, also No. 0.17 and 0.15. These two tiles were taken out of the ceiling on May 20 and it was found that the four cones in the lower holes had melted and the four cones in the middle holes were intact, although No. 0.22 was on the point of melting.

In order to derive the transmitting power of heat through hollow tiles, the temperature on top of arch was taken at 1 P. M. and 2 P. M. through an ordinary thermometer placed in a cell of slag to prevent the outer air from influencing the instrument, and was found to be, at 1 P. M., 120° Fahr.; at 2 P. M., 125° Fahr., whereas on top of iron beam it was at 1 P. M., 200° Fahr., and at 2 P. M., 215° Fahr.



One feature of these trials stands out in bold relief, *i.e.*, the remarkable reduction of heat through a distance of but 10 in. in depth, the heat decreasing from 2150° Fahr. at bottom of web to 125° Fahr. on the top.



Deflection : To get at the exact movement of the ceiling and beams, two strong posts were placed in the ground a distance off the building, and a long water level prepared across the building about 5 feet above and below the ceiling outside.

The distances A, B, C, D, E, were taken on April 13, before definite firing.

April 15, 9 A. M., first measurement across middle of structure.
A and C had lifted ⅛ in.
B had sunk ⅞ in.
" 11 A. M. A and C not moved.
B sunk to 1¼ in.
" 1 P. M. A and C not moved.
B had sunk to 2¼ in.
" 4 P. M. After watering and fairly cooling, A and C gone back to standard measure. B gone back to within ⅝-in. standard measure.

April 16:
D and E could not be measured yet on account of heat.
D had sunk ½ in.
E " " ⅜ in.

LOAD TEST.

May 8:

In the middle of each arch, on a basis of 9 sq. ft., an equally distributed load of 360 lbs. per sq. ft. was placed in the morning; at 5 P.M. A and C had not moved.
B had sunk ¼ in.
D " " ⅛ in.
E " " $\frac{1}{16}$ in.
All being now as follows:
B ⅞ in. below standard.
E $\frac{7}{16}$ in. " "

The load of 360 lbs. was allowed to remain on until May 18, A.M., when it was increased to 600 lbs. per sq. ft.

At 2 P.M.
A and C had sunk ⅛ in.
B had sunk ⅛ in.
D " " $\frac{5}{16}$ in.
E " " ¼ in.

Being then as follows: B, 1 in.; D, $\frac{5}{16}$ in, and E, $\frac{11}{16}$ in. below standard.

May 19:
All the load was removed, and at 11 A.M.
A and C had returned to standard.
B had returned within ⅝ in. of standard.
D " " " ½ in. " "
E " " " ⅜ in. " "

RESULTS.

With the exception of those hollow-tile which were immediately and close over the fire-grate (a distance of only 5 ft. 6 in.), and at white heat when the stream of water was applied, all the ceiling is in perfectly safe and sound condition, requiring only a coat of plastering to be fit for a new ceiling.

Of the tile immediately over the fire-grate, a few of the lower webs fell off; this, however, not in any way decreasing the strength of the arch, as was clearly shown by load-tests.

SEGER CONES approach in their composition that of the products of the clay industries, and in their hardening and their fusion the pyro-chemical forces act in the same way as they do during the burning of these products.

It is quite clear, therefore, that the temperature indicated by the cones will be the right temperature, and that if a sample of refractory goods melts at the same heat as a cone of a given number, the temperature indicated by the number of that cone will be the fusion point of the refractory goods.

During the tests made by us we used cones No. 022 to cone No. 2.

Cone No. 022 melts at a dull red heat.
" " 010 " " the point at which silver melts.
" " 1 " " fusion point of an alloy of 90 per cent. of gold and 10 " " of platinum.

See *British Clayworker*, Vol. 5, No. 57, page 220.

Porous Terra Cotta.

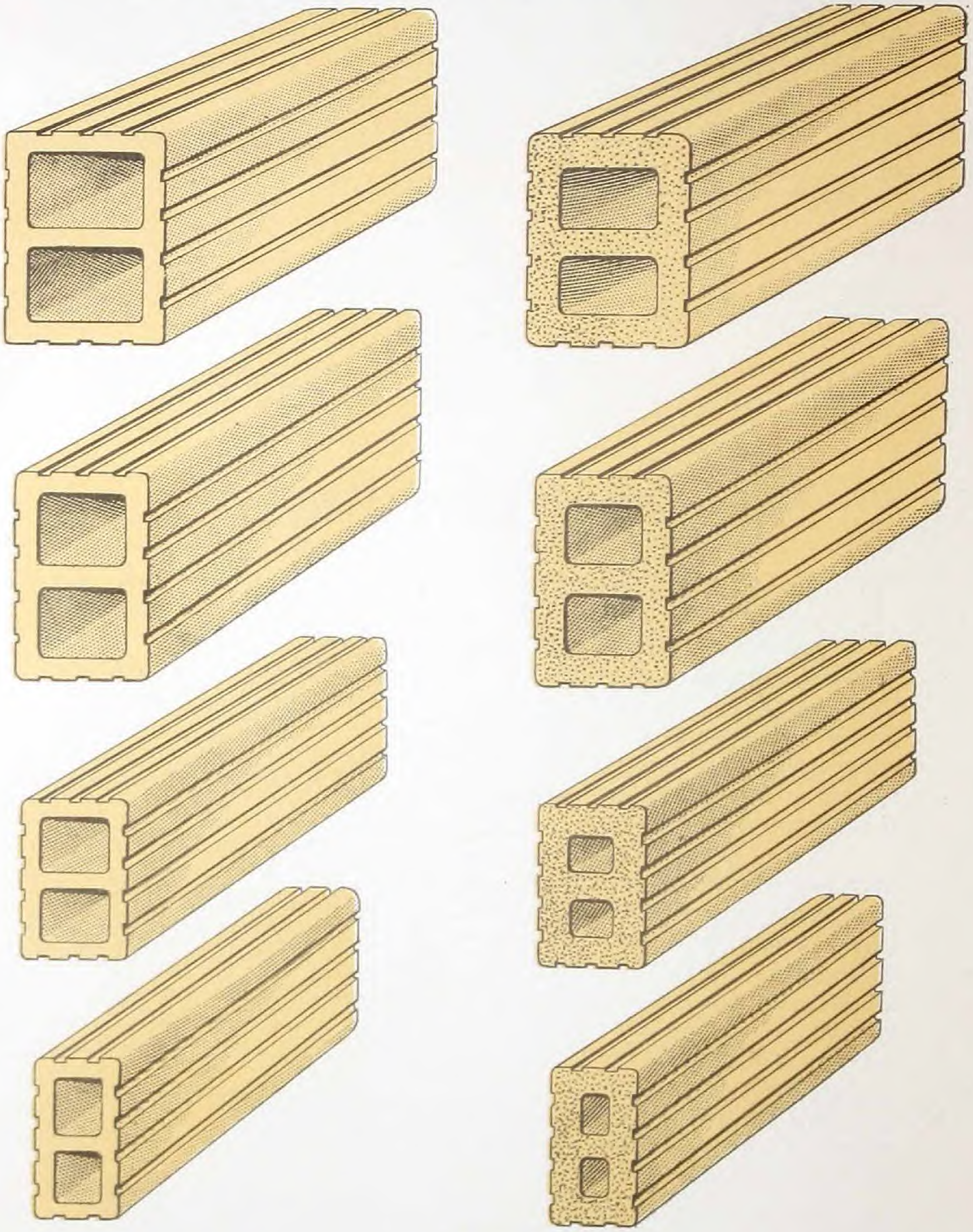
THE cost of fireproof construction has undergone in the last few years an enormous contraction, so much so that many of the best builders now assert that the difference in cost between such construction and ordinary construction is no more than between 10 and 20 per cent. No one will deny that a fireproof building properly constructed is worth all of that added expense through the security it affords to tenants, its durability, saving in depreciation, leaving out of consideration cheapness of insurance to which we have already referred.

Of all known fireproofing materials, it has been unquestionably proven, that burnt clay is the most effective for the prevention of the spread of fire; to give it its porous quality, which we have shown, increases its effectiveness, the raw clay is mixed with sawdust or other combustible material. This compound is thoroughly mixed, molded into shapes required, and, when sufficiently dried, the tiles are placed in a kiln and subjected to an intense heat, which consumes all combustibles, leaving the brick or tile porous.

This material, known as Porous Terra Cotta, is utilized in many ways; it readily admits of nails being driven into it and receives and holds plaster admirably.

For Arches, Partitions, Furring, Column Covering, Roof and Ceiling Tiles, etc., it is particularly adapted. We justly pride ourselves upon the superior quality of this material as manufactured by us, it being thoroughly uniform in size and burning—two very essential qualities.

Hollow Clay and Porous Terra Cotta Partitions.



STOCK SIZES.

3 x 6 x 12 inches.
4 x 8 x 12 "

5 x 8 x 12 inches.
6 x 8 x 12 "

8 x 6 x 12 inches.

Hollow Clay and Porous Terra Cotta Partitions.

THE construction of Fireproof Partitions made of Hollow Burnt Clay and Porous Terra Cotta Blocks have many invaluable advantages other than their fireproof qualities.

They have the greatest degree of strength combined with lightness. Are entirely vermin-proof, and do not transmit cold or heat. Being hollow, all sound is deadened, and they are absolutely free from dampness.

The importance of these undisputed facts is apparent.

A partition built of these blocks is the most substantial form at present used.

It is self-supporting, and perfectly secure against fire. The plaster is applied directly on the brick, the same being grooved or dovetailed on the surface to allow the plaster a firm hold.

They can be placed in position by any bricklayer in one-third the time required to lay common or ordinary red brick. We manufacture different sizes and of various thicknesses to meet all requirements.

Wherever it is necessary to drive a nail for the securing of base-boards or wainscoting, the porous Terra Cotta Blocks are used. A large quantity of all kinds always on hand, ready for prompt shipment or delivery.

We take this opportunity to again enter our protest against a very reprehensible method used in erecting these partitions, and one which has been the cause of considerable loss, and that is, erecting them on wooden strips instead of having them rest directly on the arch, or on the concrete filling on top thereof.

"Phoenix" Hollow Clay Tile Partition, Two-inch Thick.

SIZE OF TILES: 9 x 12 x 2 inches.

THE WEIGHT OF A WALL, 2 INCHES THICK, MADE OF POROUS TERRA COTTA HOLLOW TILES, IS 8 LBS. PER SQUARE FOOT.

A Great Saving of Room!

WE have been asked so frequently for a 2-inch Partition, differing from the present method of construction, that we feel it incumbent on us to call attention to our latest system of 2-inch Porous Terra Cotta Partition, which we claim has many advantages over any other form now in use.

Two-inch "Phoenix" Fireproof Hollow Tile Partition,

for which Letters Patent were granted us, January 29, 1895.

As demonstrated in accompanying illustrations, our fireproof partition is made of Hollow Burnt Clay, or Porous Terra Cotta Tiles set on edge in bond; between each course of brick is imbedded in the cement or mortar a long strip or strips of band-iron, being thus fully protected from the contact with heat, and giving to a 2-inch partition the same tensile strength as a wall of 4 inches or 6 inches in thickness.

Our Fire-proof Partition, being made of hollow Tiles,

IS SOUND-PROOF AND LIGHTEST.

Having dovetail grooves on both sides,

CAN READILY BE PLASTERED AND FINISHED!

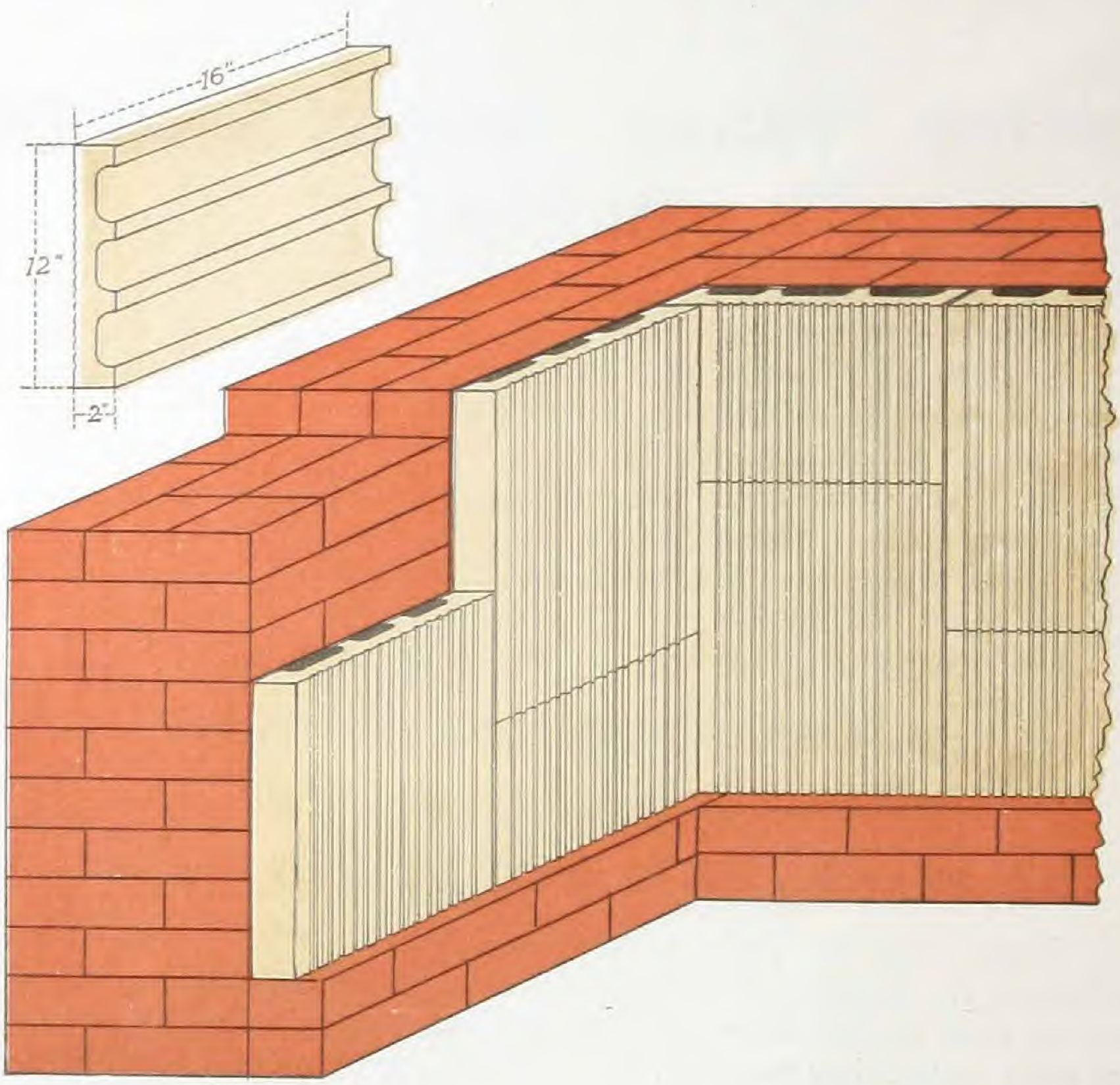
They may be built either between main-brick walls, iron columns, or wooden studding, and also **in angles and curves,** and are secured to the floor and ceiling without any preparation; they are self-supporting and can be built in lengths and heights to suit almost any requirements.

Doors and windows are placed as easily in the partition as in any ordinary Hollow Tile or Brick Partition. They can be cut into at any time, and openings refilled. The Patent applies to any kind of tiles or bricks. It is not essential that there should be a groove—on the edge, but any wall having the band-iron straps in each course, will show an **enormous increase of strength.**

An almost invaluable advantage this partition affords, is in the construction of **Elevator Shafts.**

We are glad to state that since we introduced this partition through our catalogue of 1897, it has met with increasing favor from architects and builders.

Porous Terra Cotta Furring.



STOCK SIZES.

12 x 16 x 2 inches.
9 x 12 x 1½ "

Porous Terra Cotta Furring.

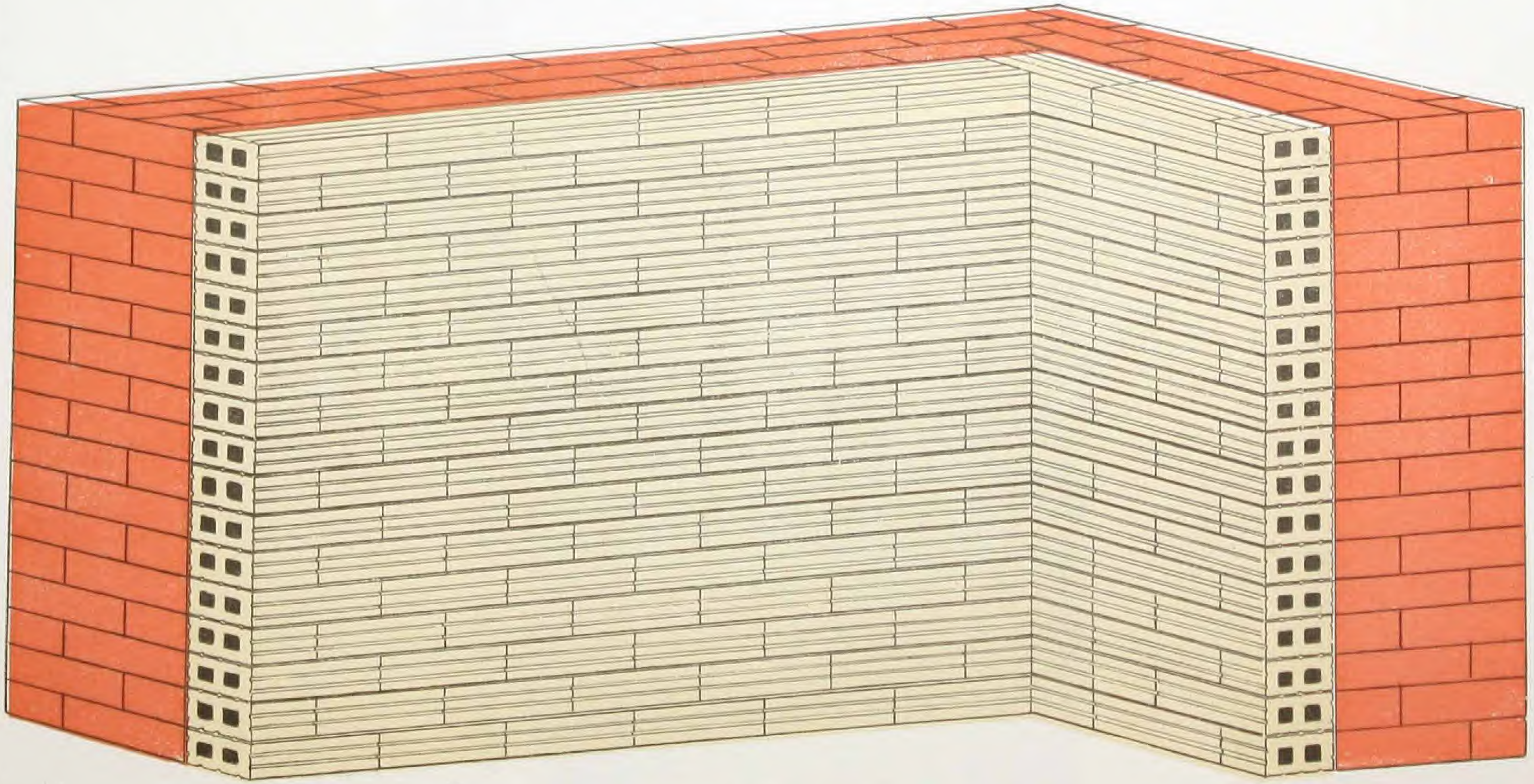
IT is very essential in making a building Fire-proof that all precautionary measures should be taken, and a very important factor is the protection of the outside or bearing walls, for which we manufacture Furring Tiles of Porous Terra Cotta material. It prevents all dampness from penetrating, besides giving a circulation of air between the wall and furring tiles.

This mode entirely dispenses with the using of lath, as plaster can be applied directly on tiles. They are secured to the wall by setting same in gauged mortar, also by the use of flat-headed nails driven into the joints of the brickwork at intervals. Nails can be driven in any part of them.

Another style of furring can also be used, see pages 36 and 37.

Hollow Brick.

("HAVERSTRAW" SIZE) FOR WALL FURRING.



SIZE, 8 x 3¾ x 2¼ inches

Hollow Brick.

("HAVERSTRAW SIZE") FOR WALL FURRING.

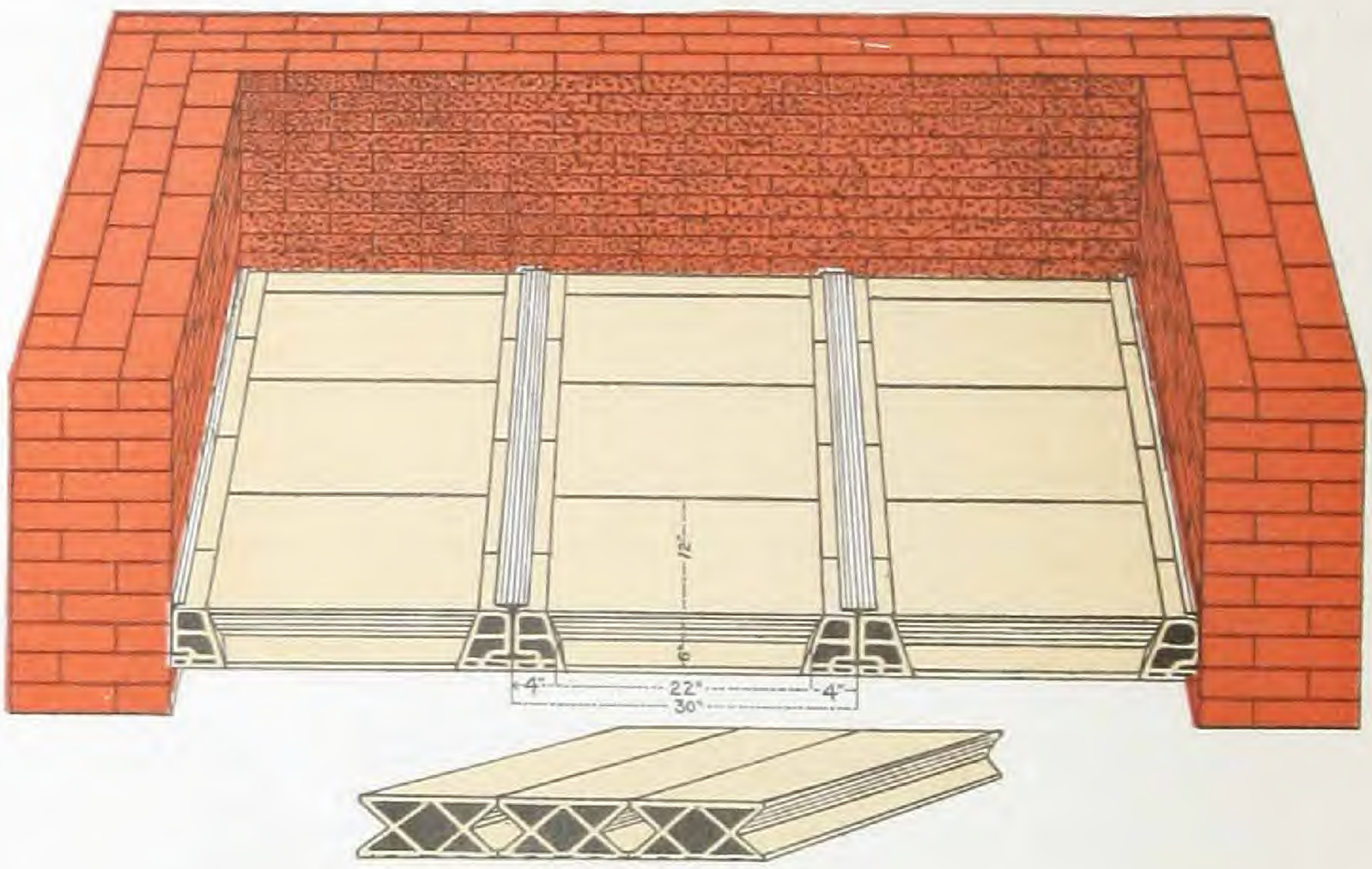
THESE Brick are of the same dimensions as the "Haverstraw" or common building brick, and are used to form the inside face of the outside or bearing walls, taking the place of furring either of fire-proof material or lathing, without increasing the thickness of the wall itself.

They are grooved and roughened to receive the plaster directly, the hollow spaces preventing the moisture from striking through. The actual cost, by using these brick, is increased only by the difference in price between common brick and Hollow Brick, which is very little.

We also make Porous Terra Cotta Brick same size as above brick, used where nailing is necessary, for Wainscoting, Chair, Rail, and Picture Molding. Where "headers" occur a brick 8 x 8 is used, thus forming a perfect and excellent wall for furring, showing no holes on face of wall, and preventing all dampness from penetrating.

"Eureka"—the Coming Arch for Light Fire-proof Floor Construction (Patented).

DURABLE, ECONOMICAL, AND RAPIDLY CONSTRUCTED.



DEPTH OF ARCH, 6 inches.
SPACING, CENTER TO CENTER OF BEAMS, 30 inches.

DEPTH OF BEAMS, 5 to 6 inches.
WEIGHT OF ARCH, PER SQUARE FOOT, 21 pounds.

25 PER CENT. LIGHTER AND STRONGER THAN ANY OTHER METHOD.

"Eureka" Hollow Tiles

BETWEEN IRON BEAMS, FOR LIGHT FLOOR CONSTRUCTION

(PATENTED).

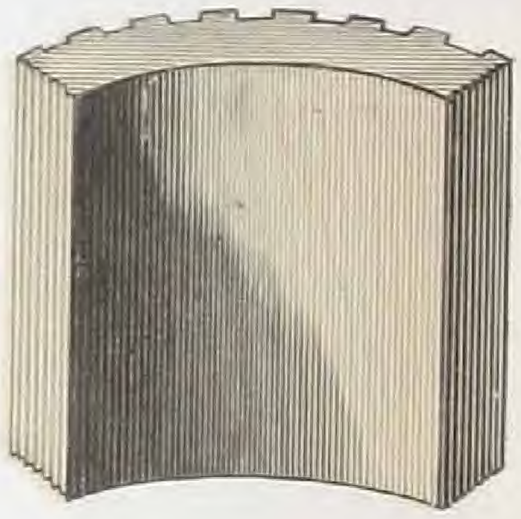
TO meet a growing demand for a light, simple, yet strong and inexpensive fire-proof construction for floors, we beg to offer our "Eureka" arch (see cut opposite), for which we claim the following advantages:

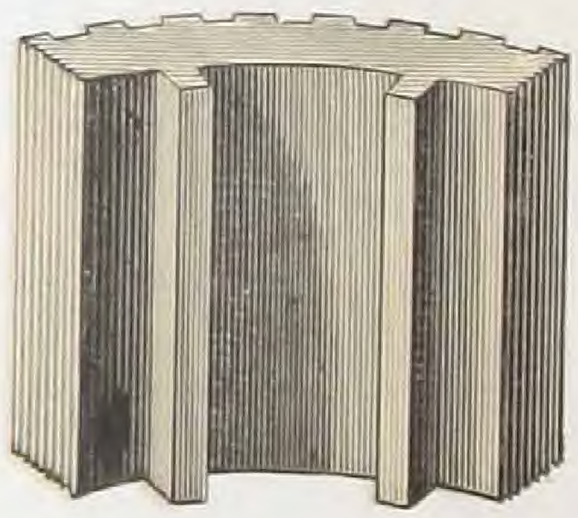
Absolutely fire-proof—made of *fire-clay*.
Quickly erected—no centering required.
Strong and durable—capable of resisting heavy weights.
Light in weight—no *concrete* necessary.
Light iron construction only required.
Ironwork thoroughly protected.
Only three sections forming arch.
Can be put up during any season of the year.

It is absolutely necessary, when using this arch, that the iron beams be spaced 30 inches center, to insure a perfect and well-constructed arch.

This arch is composed of three tiles: two abutments, or "skew-backs," which fit the beams (thoroughly protecting their lower flanges), and one center or "Key tile," set between 5-in. or 6-in. deep beams. The tie-rods going between openings on side of brick and allowing for same, the cutting of tiles becomes unnecessary.

Fire-proofing for Iron Columns.





TILES FOR PLAIN, "PHŒNIX," AND OTHER COLUMNS KEPT IN STOCK.

Fire-proofing for Iron Columns.

THROUGH experimental tests made by the Tariff Association, in co-operation with the Architectural League and others, we know that steel or iron, when exposed to a heat varying from 1200 to 1325° Fahrenheit, speedily become red hot and bend.

The necessity of protecting all structural metal exposed is therefore apparent, and we have adequate means at hand in the use of Hollow Tile of Porous Terra Cotta; these having again (see report Pittsburg Fire) demonstrated their thorough efficiency for that purpose.

From an interesting paper of Mr. Peter B. Wight, contributed to *The Brickbuilder* of August, 1897, on column protection, we cite the following deduction made by him:

"He found that porous terra cotta was the best material for that purpose, because, on account of its non-conducting properties, it did not require a hollow space." He also found by experiment and practice that a thickness of 2½ inches of this material was sufficient under any circumstances, and that wherever it could be used it need not project beyond any flange more than 1 in. He became convinced that any fire-proofing material was liable to be forced away from the column by its own *lateral expansion in the direction of the length of the column*, and that it must be fastened directly to the column by mechanical means, countersunk for their own protection. Those are the fundamental conditions of column fire-proofing, no matter how applied.

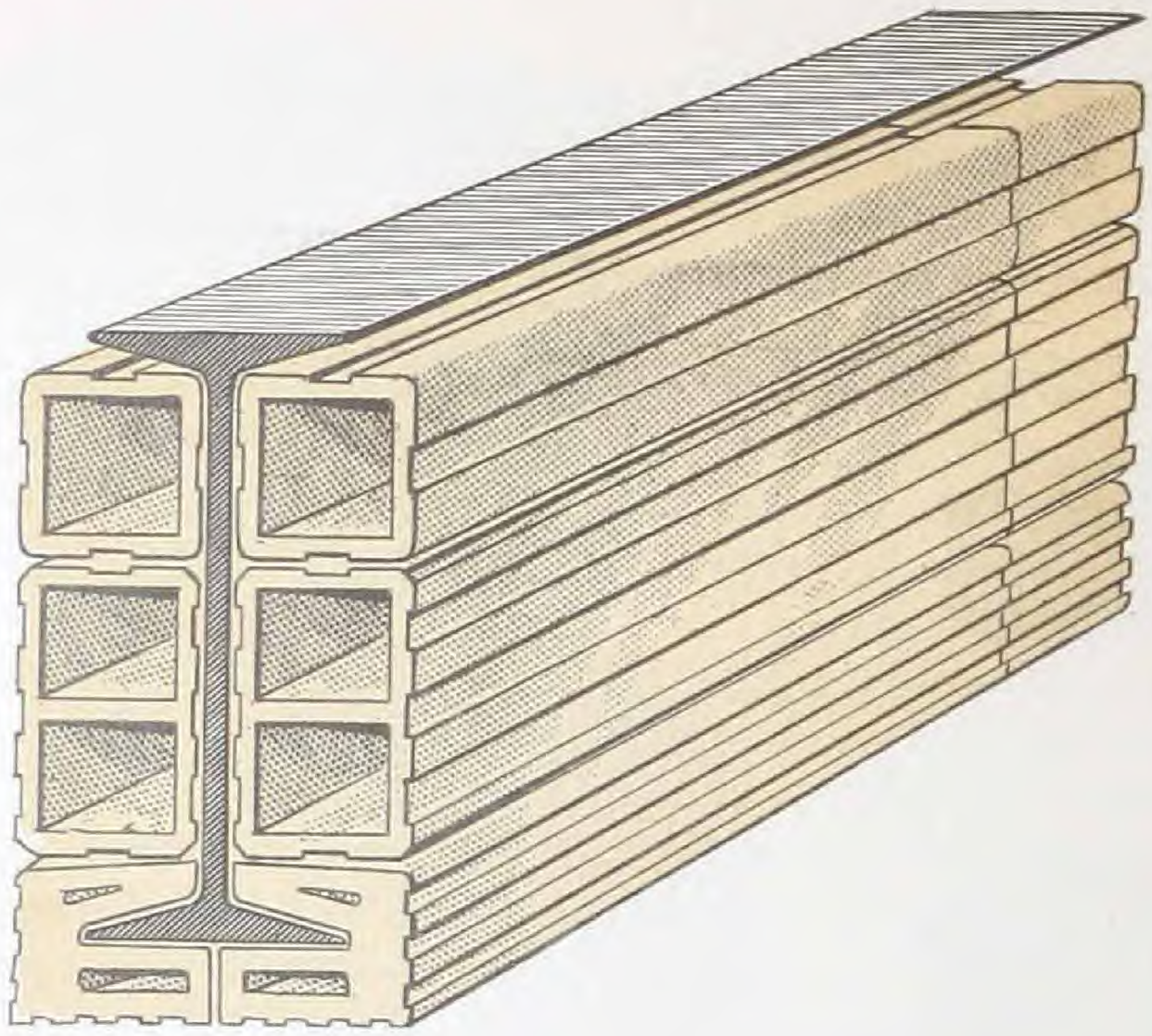
They make it possible to save much space and get the best result. They are applicable to every form of vertical support now in use and in applying them, the best fire-proofing material ever made, porous terra cotta, should always be used.

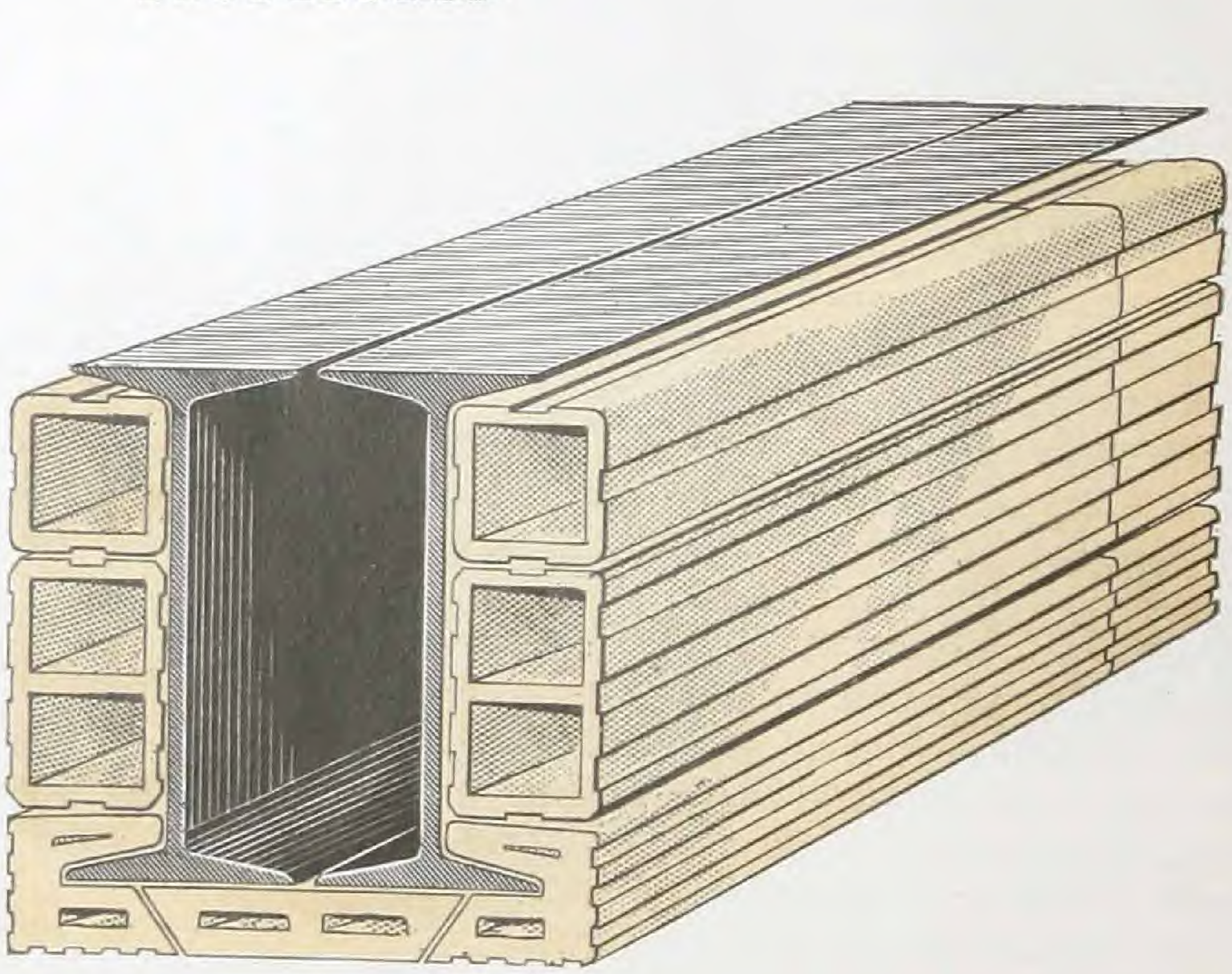
We show on opposite page illustration of column covering.

Stock sizes of round column covering 1½ and 2 in. thick. Greater thicknesses made to order.

As our underwriters are now insisting upon a thorough protection of columns even in buildings already constructed, it becomes a matter of pressing consideration; as the rates of insurance are regulated on the particular kind of material used for such protection and porous terra cotta commands the most favorable rates, the question of self-interest to owners is evident.

Fire-proofing for Iron Girders.





FOR SINGLE AND DOUBLE GIRDERS.

Fire-proofing for Iron Girders.

A BUILDING cannot be called entirely Fire-proof if any of the constructive Ironwork is exposed. We call your attention to our mode of protecting (on opposite page) Iron Girders. This material is made of Hard Burnt Clay and also of Porous Terra Cotta, and designed in various shapes and sizes to meet all requirements.

Gauged mortar is used for holding these tiles to girders; any width girders can be covered by increasing bottom (center) piece.

Clay and Porous Terra Cotta Tiles.

FOR ROOFS AND HANGING CEILINGS.

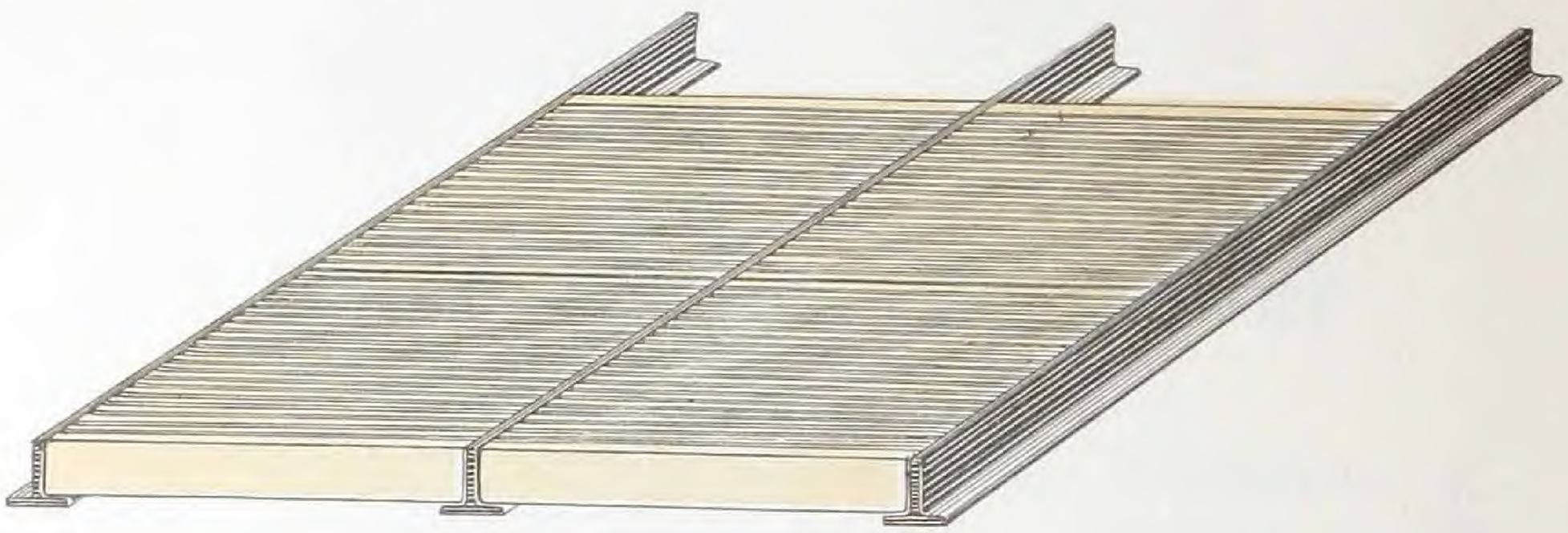


Fig. 1.

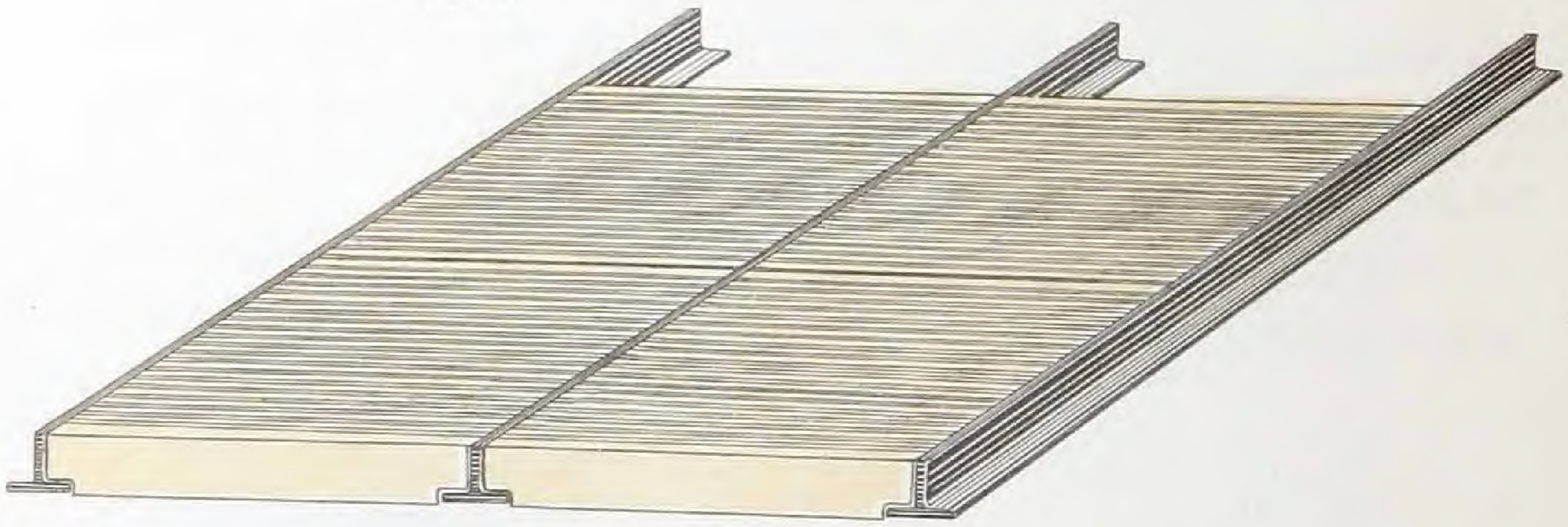


Fig. 2.

STOCK SIZES.

12 x 16 x 2 inches. 12 x 18 x 3 inches. 12 x 20 x 3 inches.
12 x 24 x 3 inches. 12 x 24 x 4 inches

Clay and Porous Terra Cotta Tiles

FOR ROOFS AND HANGING CEILINGS.

WHILE recognizing the necessity of a dry roof, we contend that fire-proof qualities are equally essential, and the advantage of having both is a matter worthy the attention of the building public. In buildings where the roof is flat, and the construction is of iron, a flat arch of Hollow Burnt Clay Blocks is laid between the beams in the same manner as the floor arches (also as shown on pages 46, 48), only the weight provided for need not be so great. Hence the Beams and the Arch blocks can be made lighter. In a pitched roof the form of erection is the same as the drawings on opposite page, Fig. I, to which we call your attention. The ⊥'s are usually placed from 17 to 25 inches apart, and porous Terra Cotta Tiles of any desired thickness are set to come flush with the top of the ⊥. They are then covered on the outside with slate or tin. The material readily admits driving of nails, and holds as securely as wood.

In Mansard Roofs the ⊥'s are set vertically, and the tiles are placed in position in the same way.

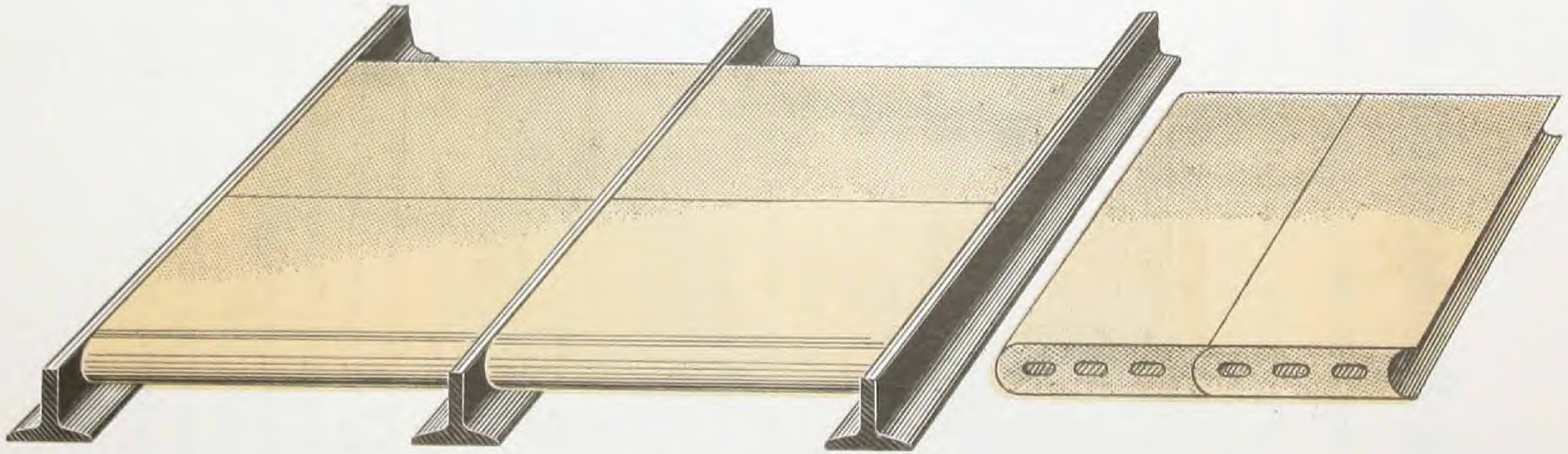
If it is desired to have a roof made of segmental Arches, a horizontal ceiling can be constructed of I beams, and fire-proof ceiling suspended, made of Porous Terra Cotta material as shown in Fig. II, opposite, and be plastered and finished directly, thus making a flat ceiling. The same material is applicable to wooden beams or rafters in the construction of roofs or ceilings, and, in fact, protecting all exposures, whether they be wood or iron.

For Roofs, Hard Burnt Clay Tiles can also be used as well as the Porous Terra Cotta.

N. B.—In placing ⊥'s allow 1 inch in addition to length of tile from center to center of iron, for mortar.

Hollow Clay and Porous Terra Cotta Roof Tiles.

(BOOK SHAPE.)

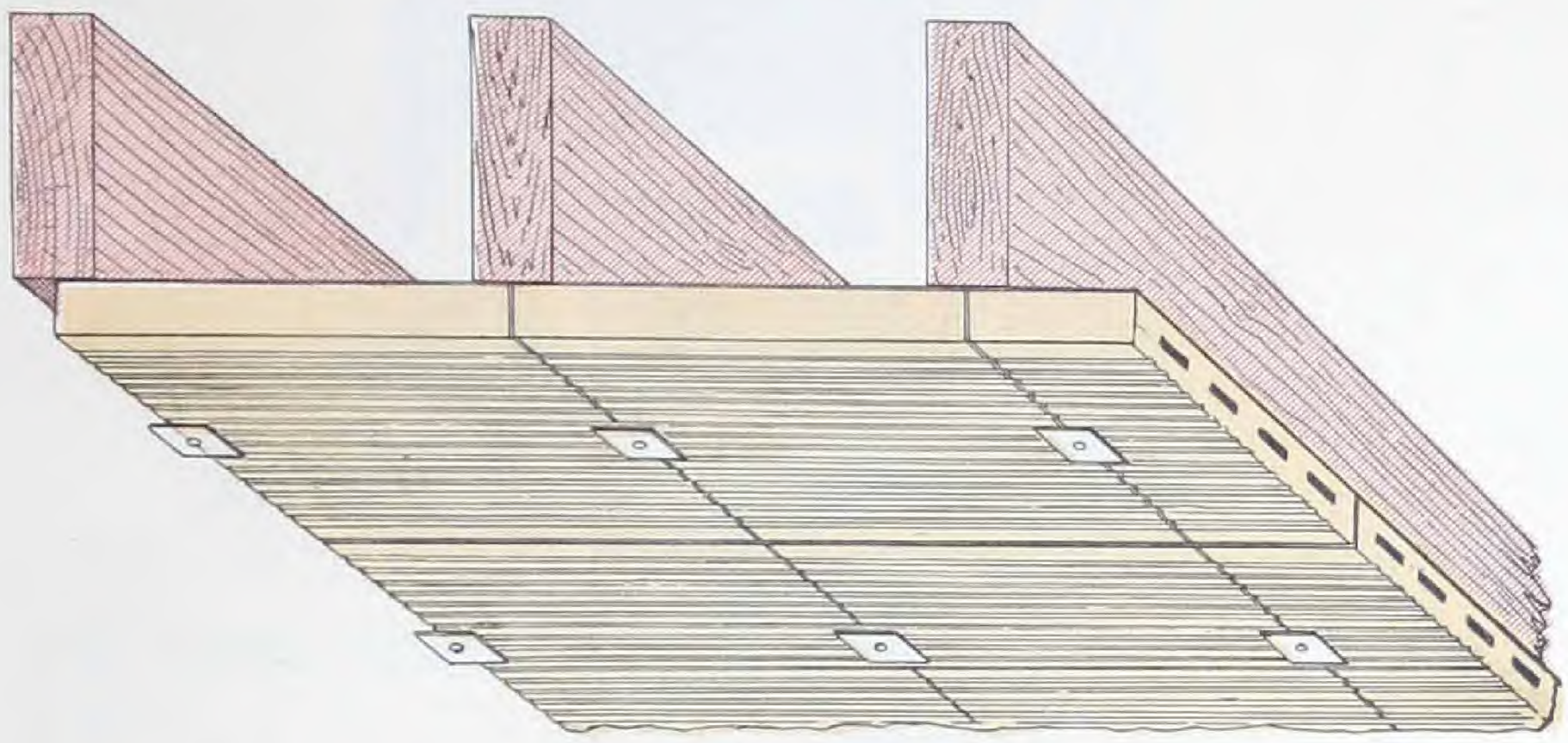


SIZES.

12 x 18 x 3 inches. 12 x 20 x 3 inches. 12 x 24 x 3 inches 12 x 24 x 4 inches.

Po ous Terra Cotta Tiles.

FOR WOODEN BEAMS.



SIZE.

12 x 16 x 2 inches.

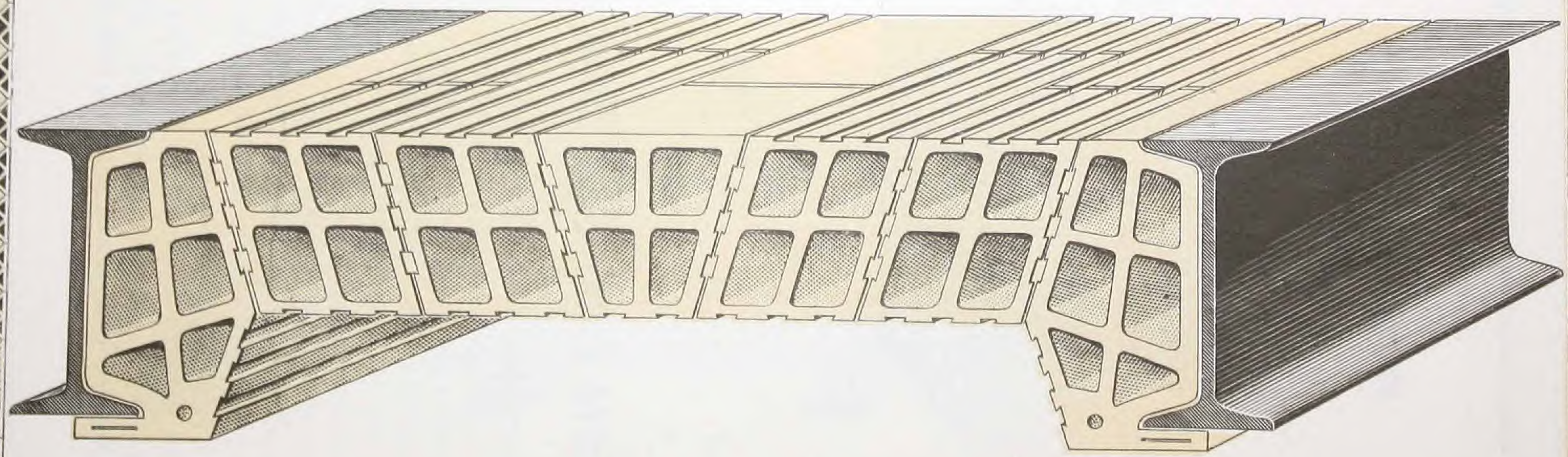
Porous Terra Cotta Tiles, Beam Protection.

FOR the protection of wooden beams, we make, and have constantly in stock, Porous Terra Cotta and hard-burned clay blocks size 12 in. x 16 in. x 2 in. These blocks are fastened to the under side of the beams by means of an iron washer (with hole through the center), made sufficiently large to catch the center of two blocks at end; a wire nail is then driven through the washer into the beam, or a screw can be used, and they are thus firmly secured. This method is simple and complies with the law where wooden beams are exposed to the heat, especially over boilers, drying-rooms, ovens, etc.

The present Building Laws of New York City exact: That all ceilings over bakers' ovens shall be fireproof. The above offers a cheap and effective method of complying with the law.

Hollow Brick for Flat Arches.

SUPPORTED ON RAISED "SKEW BACKS."
FOR ROOFS, ETC.



DEPTH OF "SKEW" OR END BRICK, 10 and 12 inches
" " FLAT ARCH BRICK, 6 and 8 inches.

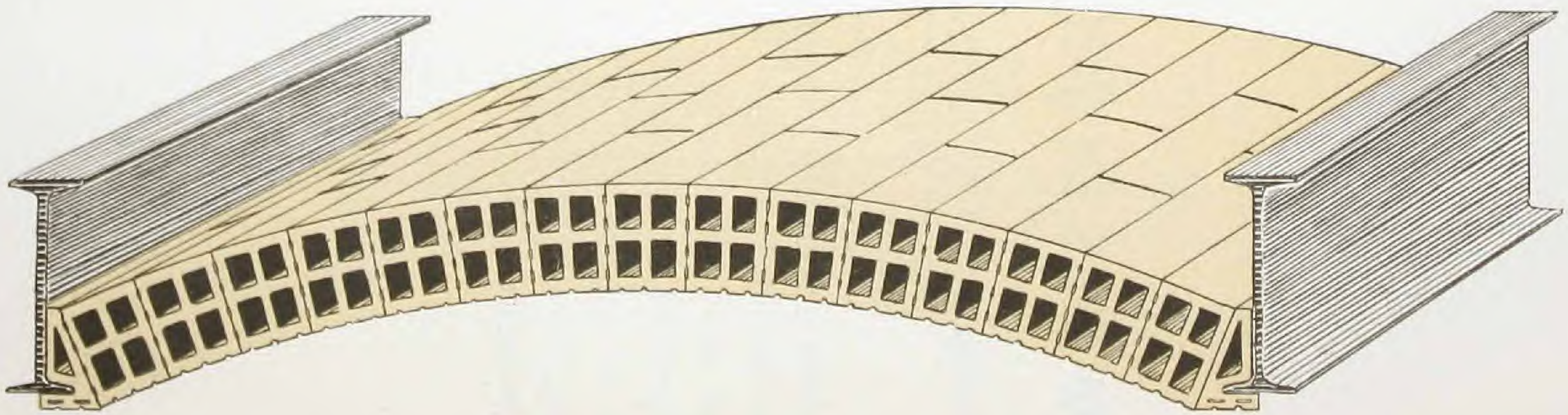
Hollow Brick for Flat Arches.

FOR ROOFS, STOREHOUSES, ETC., SUPPORTED ON RAISED "SKEW BACKS."

THIS style of Arch is generally used in cases where beams are deep and no flat finish is required; for the Flat Arch small brick can be used at a less expense than the large, and thus all necessity for concrete filling on top is dispensed with. It will be found useful in the construction of flat roofs, thereby saving expense and weight, both in beams and brick. Can be made with or without beam protection.

Segment Arches.

WITH AND WITHOUT BEAM PROTECTION.



SPAN FROM 10 to 15 FEET BETWEEN IRON BEAMS.
DEPTH OF ARCH, 6 and 8 inches.

Segment Arches.

FOR Factories, Breweries, Stores, Storage Warehouses, etc., wherever an arch is called upon to bear great weights, no other is comparable to this.

It can be made of hollow-tile, either 6 in. or 8 in. deep, as shown in cut opposite, with or without beam protection.

This arch, allowing for a span of 15 feet between iron beams, secures great saving in cost of iron, is rapidly constructed, and, its rise bringing its center to level of top of beams, leaves only the haunches adjoining iron beams to be filled in with concrete.

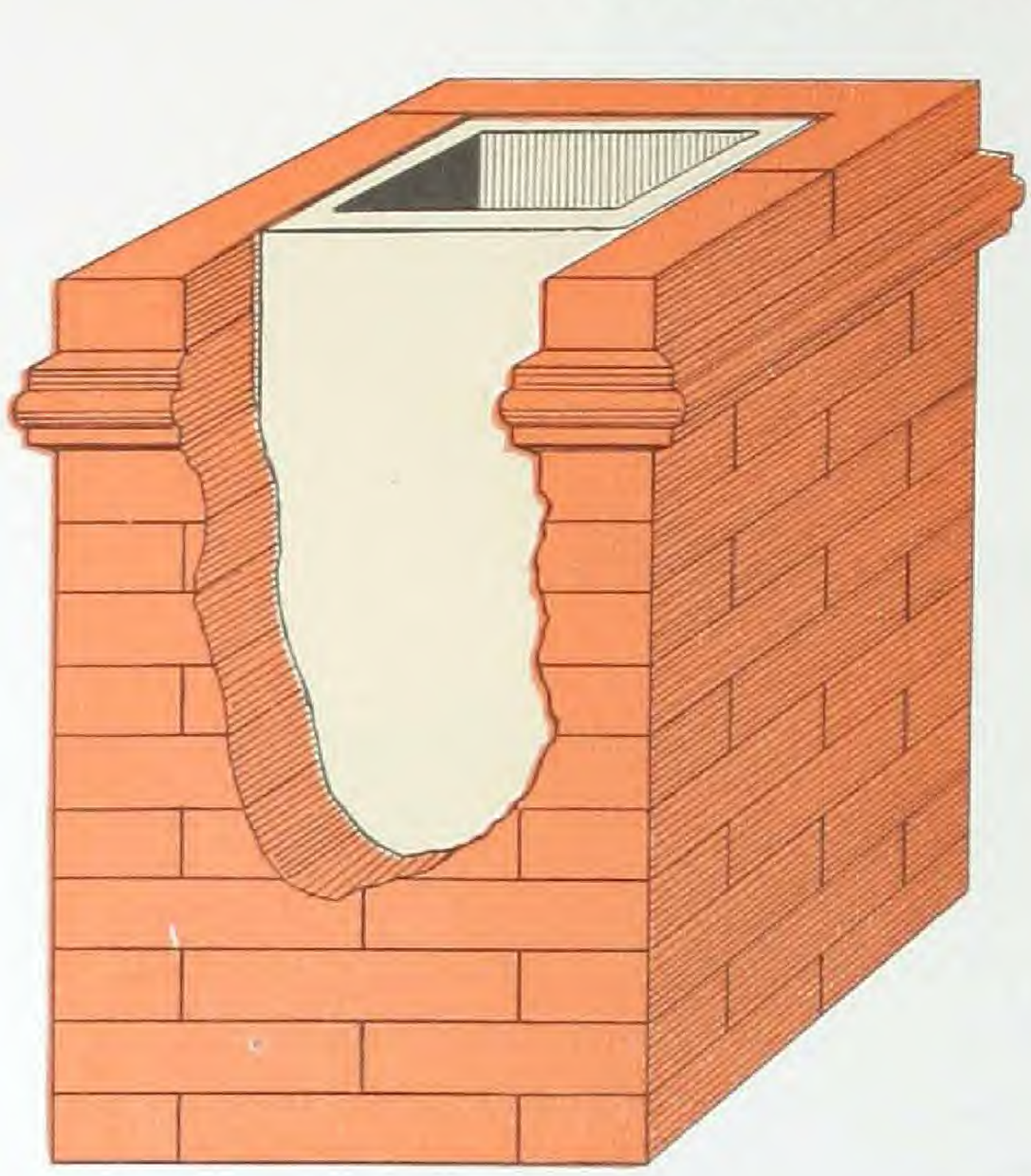
Its strength is in inverse ratio to its cost.

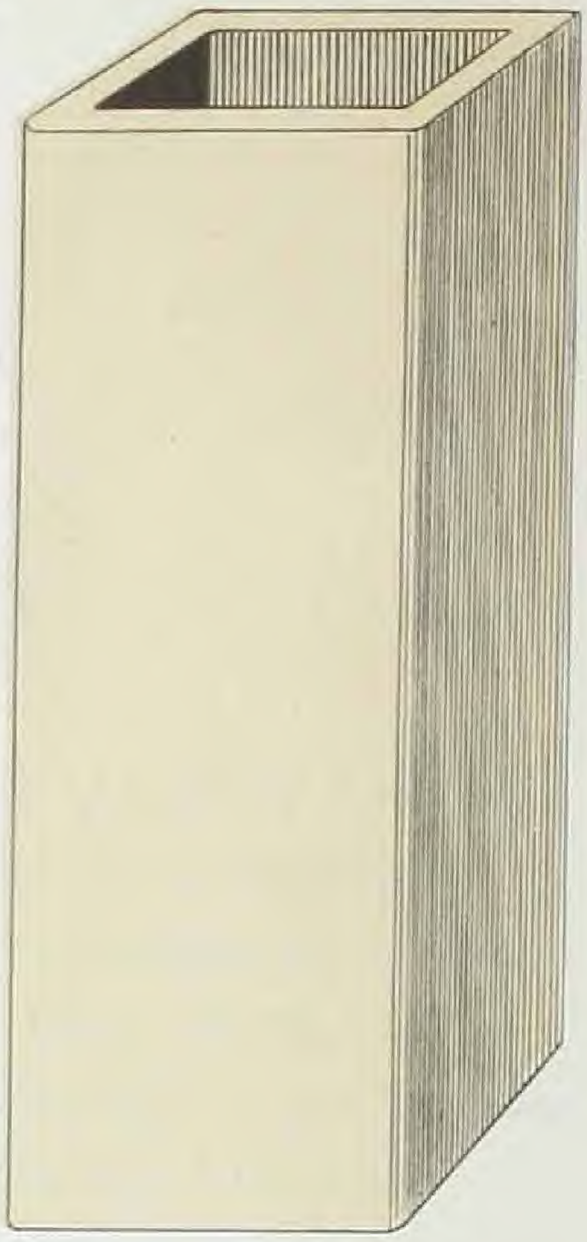
Its weight-bearing capacity is unquestioned; an actual test made on an arch of this construction with a span of 12 feet, 6 inches deep, carried without any deflection a weight of 5,200 pounds placed on **one square foot** of space in **center** of arch.

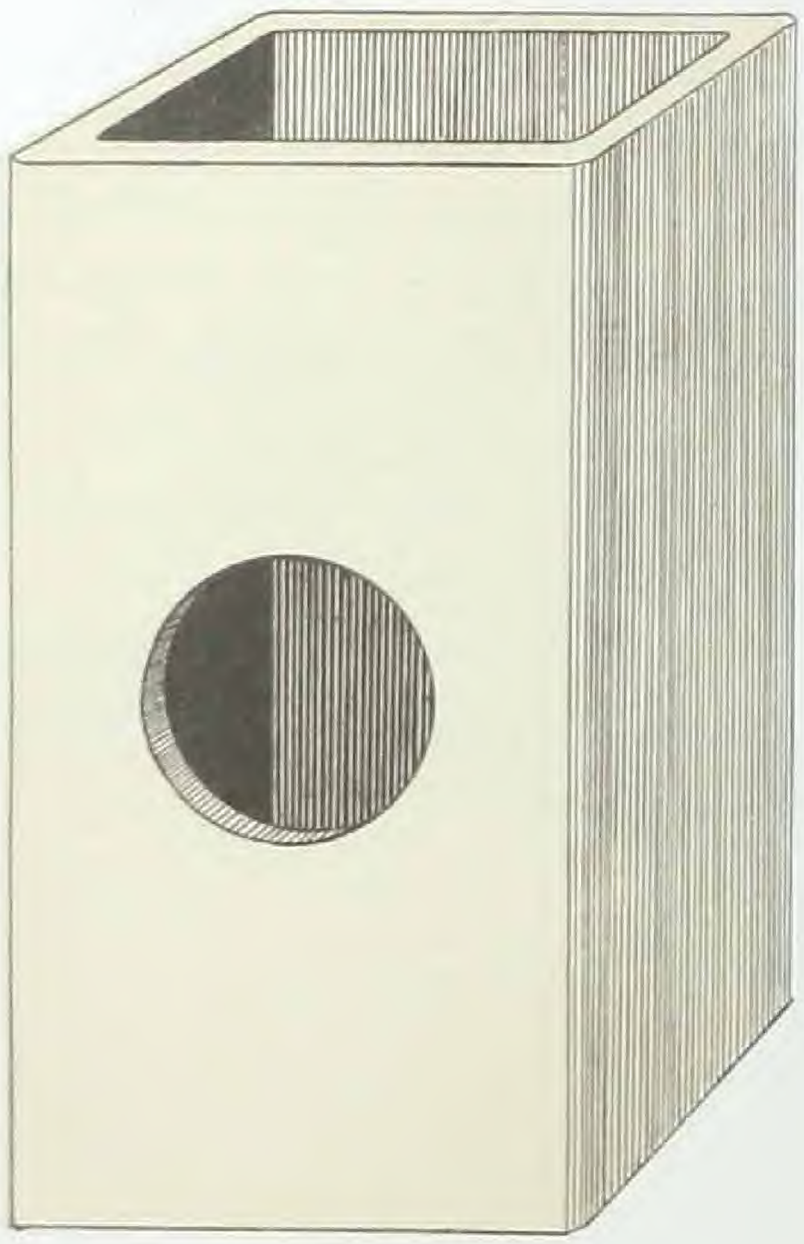
We have supplied numerous buildings with these arches of varying spans, from 10 to 15 feet between iron beams.

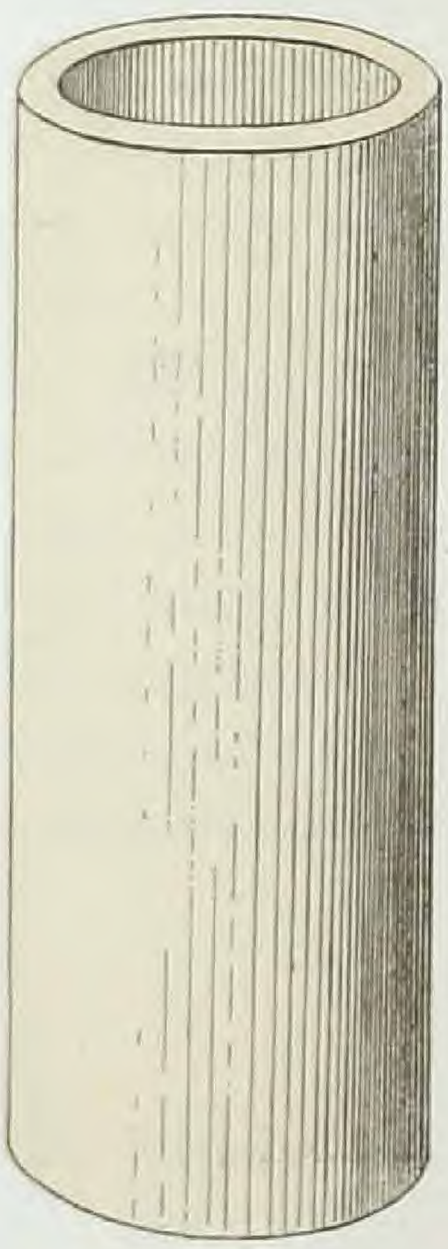
We beg to call the attention of architects to the qualities of this arch as enumerated. No cheaper form of construction, considering strength with lightness, is at hand.

Fire-clay Flue Linings.









Fire-clay Flue Linings.

WE manufacture Fire-clay Linings of all descriptions, round and square.

The efficiency of Fire-clay Flue Linings has been thoroughly tested and approved, and they are now recommended and used by leading architects and builders as a necessity for the proper protection of buildings against fire. Insurance Companies give better rates on buildings constructed with them.

They are superior to metal as conductors of hot air, and will carry the heat with less loss from radiation; are safer, being made of non-conducting materials, and will not transmit the heat to wood coming in contact with them; are cheaper and more durable; are used for chimney linings, for partitions in chimneys, for conducting hot and cold air, for ventilation, etc.

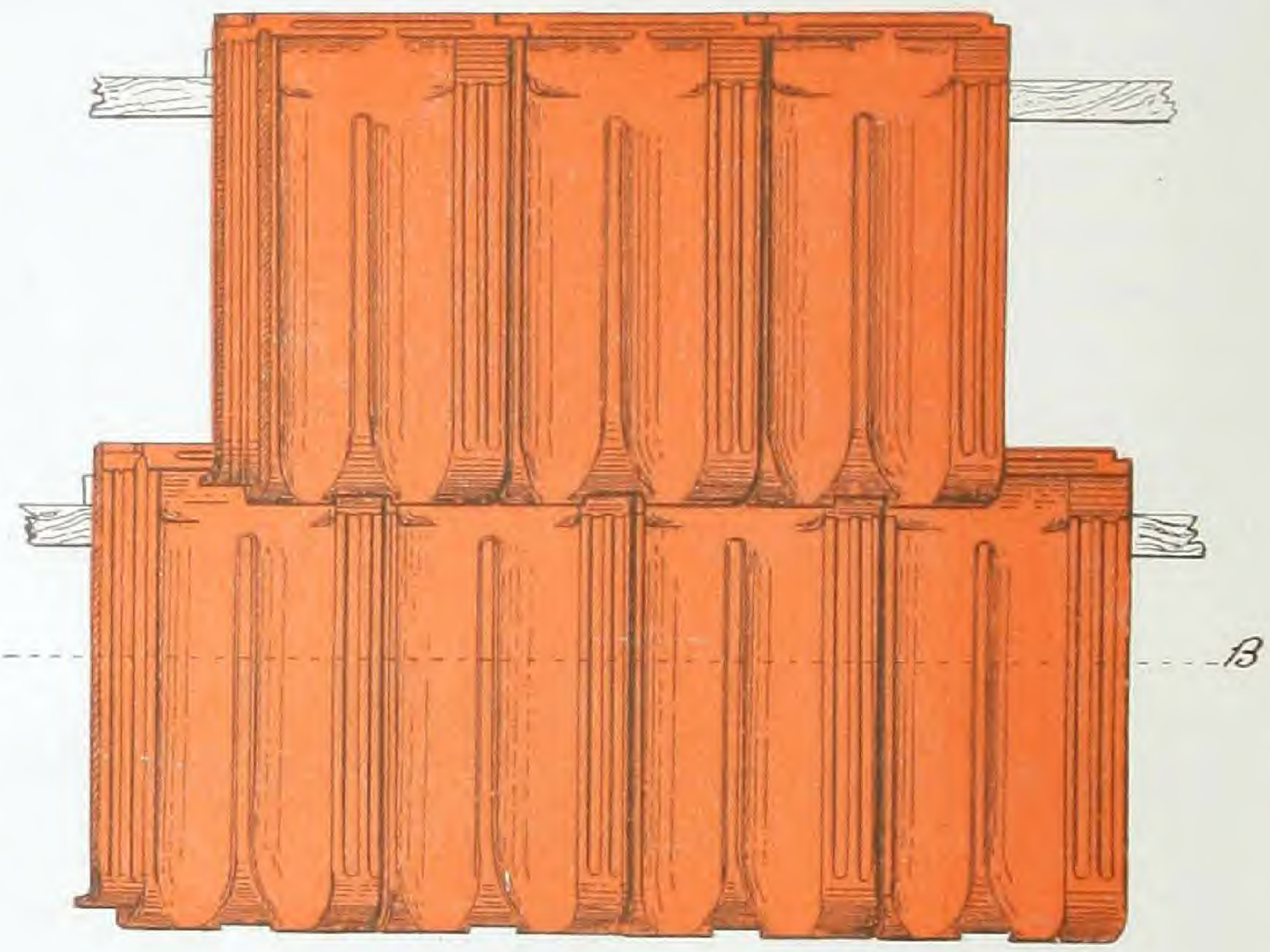
Register, Pipe Openings, and odd shapes made on short notice.

THE FOLLOWING IS A LIST OF FLUE LININGS, BOTH SQUARE AND ROUND:

FLUE AND CHIMNEY LININGS. IN TWO-FOOT LENGTHS.	ROUND FLUES. IN TWO-FOOT LENGTHS.
4½ in. x 8½ in., outside measure.	6 inches . . . . . inside measure.
4½ " x 13 " " "	7 " . . . . . "
4½ " x 18 " " "	8 " . . . . . "
8½ " x 8½ " " "	9 " . . . . . "
8½ " x 13 " " "	10 " . . . . . "
8½ " x 18 " " "	12 " . . . . . "
13 " x 13 " " "	15 " . . . . . "
13 " x 18 " " "	18 " . . . . . "
18 " x 18 " " "	20 " . . . . . "
	24 " . . . . . "

All Flues are made without Collars.

Clay Roofing Tiles.



Section through A. B.

SIZE.

8 x 14 inches (to the weather).
Or 128 Tiles to 100 Square Feet.
Weight per Square (100 feet), 896 lbs.

Clay Roofing Tiles.

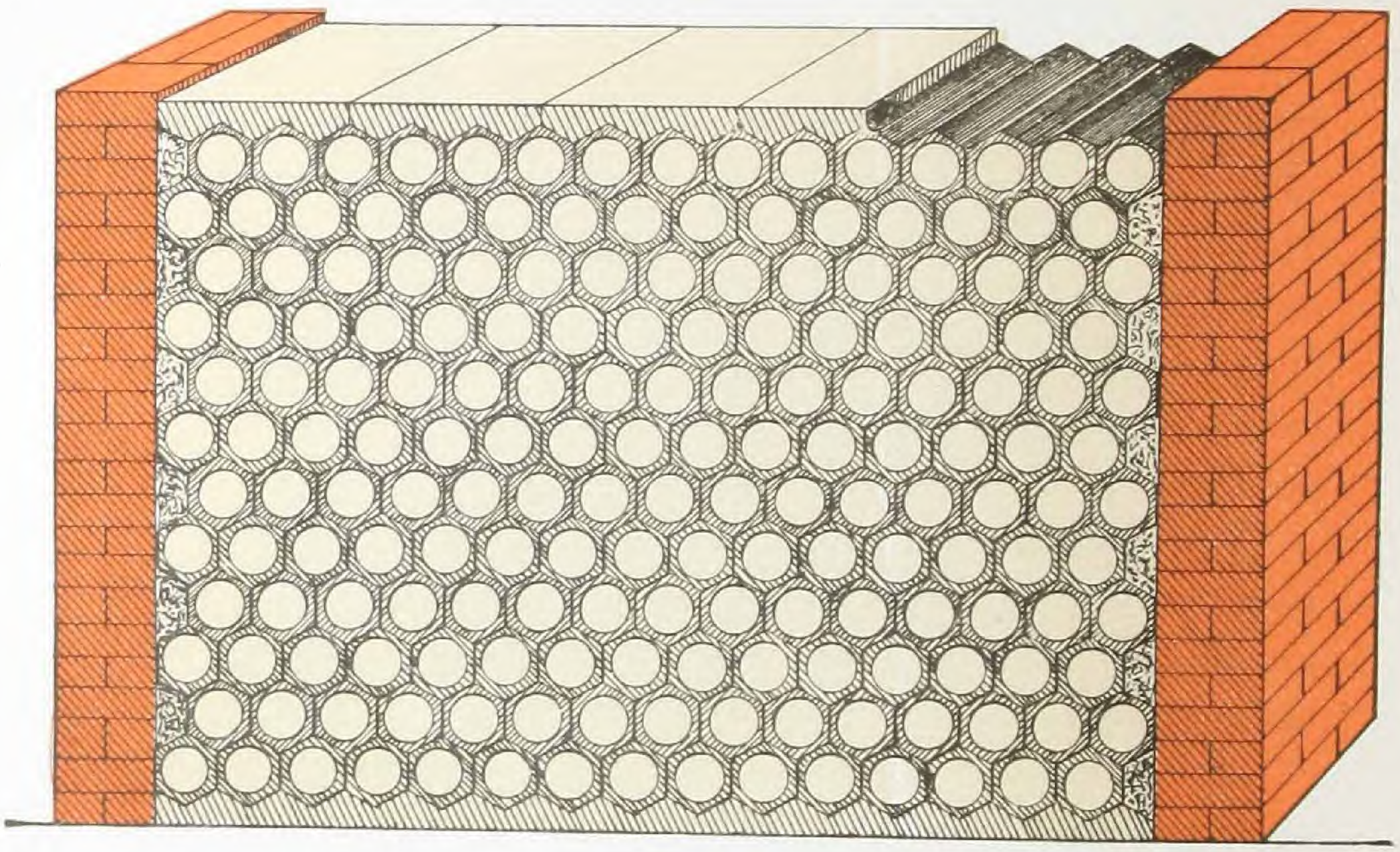
THESE Tiles are made of Hard Burnt Clay (design as shown opposite) and are used on Pitched and Mansard Roofs. They are held on the iron or wooden rafters by projections on inside of tile so formed as to take hold of rafter, besides one overlapping the other, and also by means of wire fastened to rafter on lower part of Tiles, their own weight holding them in position.

The moderate cost and fireproof qualities of these Tiles make them a favorite roofing, especially in warm climates, as they make a cool roof. Besides being used for Dwellings, they are used largely for Factories, Mills, Warehouses, Depots, etc., etc.

Roofs covered with these tiles are rendered absolutely safe against fire from adjoining buildings.

Special designs of top or Ridge tiles made to order.

Clay Hollow Tiles for Bottle Racks.



SIZE.

5 x 12 inches outside measure.

Clay Hollow Tiles for Bottle Racks.

SEE CUT OPPOSITE.

SOMETHING useful as well as ornamental to take the place of wooden racks.

These tiles, 5 x 12 in. outside measure, made of Red Clay, burned, can be laid up by any bricklayer in a very short time, one placed above and beside the other, like a wall.

As the air circulates freely around the bottles the liquid is kept cool and in perfect condition; each bottle occupying a space by itself the risk of breakage is minimized.

Any bottle can be removed without disturbing the others.

Economy of space. 4½ tiles to the square foot.

Rat and vermin proof. No danger of racks falling.

Tiles hold either pint or quart bottles.

During the past years a large number of these racks have been erected in the wine vaults of our leading hotels and in private houses, giving general satisfaction.

Tiles can be shipped loose—no packing necessary.

Send for prices, stating number of square feet required.

Table of Weights, Etc.

"EXCELSIOR" END-CONSTRUCTION FLAT ARCHES.

Width of Span Between Iron Beams.	Depth of Arch.	Weight per Square Foot.	Remarks.
5 feet to 6 feet.	8 inches.	27 lbs.	See Test of Strength on pages 20 and 21.
6 " 7 "	9 "	29 "	
7 " 8 "	10 "	33 "	
8 " 9 "	12 "	38 "	Cut of Arch on page 18.

HOLLOW BRICK FOR FLAT ARCHES.

(Side-construction or Old Style.)

Width of Span Between Iron Beams.	Depth of Arch.	Weight per Square Foot.	Remarks.
3 ft. 6 in. to 4 ft. 0 in.	6 inches.	27 lbs.	See Cut of Arch on pages 14 and 16.
4 " 0 " to 4 " 6 "	7 "	29 "	
4 " 6 " to 5 " 0 "	8 "	32 "	
5 " 6 " to 6 " 0 "	9 "	36 "	
6 " 0 " to 6 " 6 "	10 "	39 "	
6 " 6 " to 7 " 0 "	12 "	44 "	

PARTITIONS.

	Thickness.	Weight per Square Foot.	Remarks.
Hollow Brick (Clay) Partitions.	3 in.	14 lbs.	See Cut of Blo ks on page 30.
" " " "	4 "	15 "	
" " " "	5 "	19 "	
" " " "	6 "	20 "	
" " " "	8 "	27 "	
Porous Terra Cotta "	3 "	16 "	
" " "	4 "	19 "	
" " "	5 "	22 "	
" " "	6 "	23 "	
" " "	8 "	33 "	

FURRING, ROOFING, AND CEILING.

	Thickness.	Weight per Squar Foot.	Remarks.
Porous Terra Cotta Furring . .	2 in.	8 lbs.	See Cut of Furring on pages 34 and 36. See Cut of Roofing and Ceiling on pages 44, 46, 47.
" " Roofing . .	2 "	12 "	
" " " . .	3 "	14 "	
" " " . .	4 "	18 "	
" " Ceiling . .	2 "	11 "	
" " " . .	3 "	14 "	
" " " . .	4 "	18 "	

"Haverstraw" Size Hollow Brick, per M—3,000 lbs.
6-inch Segmental Arches, 26½ lbs. per square foot.
8-inch " " 32 " " "
"Phœnix" 2-inch Patent Partition—Weight per square foot, 8 lbs.—See Cut, page 32.
"Eureka" Flat Arch, 21 lbs. per square foot.—See Cut, page 38.

Can Fireproof Buildings Burn Down?

TO ANSWER THAT QUESTION IT IS ESSENTIAL TO STATE

WHAT CONSTITUTES A FIREPROOF BUILDING.

FILL in between the iron or steel beams which compose the floor and ceiling, hollow terra cotta tiles, which are light in weight and sufficiently strong to resist almost any load the iron or steel beams themselves could carry. All partitions, furring, roofing, and ceiling of same material.

Thoroughly protect all the constructive ironwork, such as columns, girders, and beams with porous terra cotta, and we can safely say that you have a building which cannot be destroyed by fire.

Cement, concrete, iron or wire-lath will not last any length of time in a fire, as has been repeatedly demonstrated. Nor do they give the rigidity or lateral support necessary for such constructions. Fire clay (terra cotta) has no equal!

This may seem a pretty broad statement to make, but we reinforce our individual belief by quoting the opinion of some of our most prominent architects and builders. The *Brickbuilder*, of January 20, 1897, states:

MR. BRUCE PRICE: "I believe terra cotta to be an excellent material on account of its strength as well as sound proof qualities; while for resisting the spread of a fire, the hollow blocks would undoubtedly last longer than anything else."

MR. G. B. POST: "I consider porous terra cotta a most excellent material for resisting the combined action of fire and water, conditions which always arise in any burning building. For fireproofing columns I use nothing but terra cotta, and I do not believe that a dangerous heat would go through any of the present market constructions of terra cotta fireproofing, if used in an intelligent and proper manner."

MR. FRANCIS H. KIMBALL: "In my opinion porous terra cotta can throughly fireproof all the construction of a building, and is the best medium for the purpose in the market. I have used this material in the Manhattan Life, the Standard Oil, and other large structures in New York, and consider that 4 inches of terra cotta would be better protection than 12 inches of stone."

MR. C. T. WILLS (one of our largest builders) states: "It is possible by using terra cotta to build a structure which shall be absolutely fireproof, and I feel that nothing else would give equal satisfaction, while as a matter of practical building construction, terra cotta is, by all odds, the best material in the market."

Is this not worthy the consideration of any prospective builder? Would it not be to his interest to investigate and find out if the facts be sufficient to warrant the foregoing claims?

No building is or ever can be fireproof as regards its contents so long as its windows are unprotected against the heat and flames from a near burning structure. It is imperative that fire-resisting shutters of some type should be employed to furnish protection against that source of danger.

Were the general public more thoroughly acquainted with the possibilities of fireproofing, it would cease to be skeptical as to its efficacy.

The report of Mr. James R. Sheffield, President of the New York Fire Department, shows "that in 1896 the average loss from fires in this city was $700 a fire, against $1,300 in 1895, and $1,400 in 1894, and as a consequence of this state of facts, a reduction of 15 per cent. in insurance rates has been made with a prospective further reduction." Does this not prove that among the insurance companies, who are the parties particularly interested, conviction has taken the place of skepticism?

Facts.

WE gave in our introductory a report of the destructive fire in Pittsburg on May 3, 1897. That fire was one of the severest trials modern fireproofing was ever called upon to stand, and, by the light of the experience then furnished, we are confirmed in our opinion, so often expressed, that fireproofing to be efficient must be radically treated. We have again and again, through our catalogues, called attention to the necessity of protecting all steel and iron used, and this fire so demonstrates.

We quote from Mr. Reed's report to the Tariff Association on the Horne Department Store, the building suffering the most. He states:

"Any unprotected iron or steel speedily became red hot and in such condition was ready to bend like putty. The steel girders and beams supporting the tile roof were entirely bare and had no protective covering at all. The designers of the building evidently relied for protection upon the suspended ceiling of flat tiles, carried by light angle- or tee-bars. In this they made an error and this error is responsible for nearly all the structural damage to the skeleton and wall. Furthermore the columns of the sixth story, which carried the roof, were protected by tiling only up to the ceiling. In the space between the ceiling and roof they were entirely bare. These columns also got red hot between ceiling and roof and bent readily.

"The majority of the floor arches in the path of the falling materials (roof and water tank), were smashed through from roof to ground floor. That the wreck of these floor arches was caused by this and not by the action of fire is seen from the fact that practically not an arch is broken through anywhere in the building, except directly under the section of roof that collapsed. There are no beams, girders, or columns in this building which are warped by heat. The injured columns and beams are either those which, as above described, were unprotected, and, getting red hot, yielded and bent from the weight they had to sustain, or those which were displaced, carried down, or bent by the shock of falling wreckage. The girders (except those of roof) in this building were admirably protected and not one was injured by the fire; even the four that were knocked out by the fall of the tank and roof are found among the wreckage apparently as straight and true as when they were put up. Now, although four-fifths of the arches were standing after the fire and one could walk safely over them, there is nevertheless a damage all throughout the building to the underside of these arches by the breaking and dropping out of the lower webs. Few arches escaped this damage. We have all along said we don't know how serious the damage is likely to be to these hollow tile floors, and we don't know which style or make is the best. Well, we know now that in a building with hard tile arches, of what is known as side-construction, you

may find after the fire all the arches in place and be able to walk fearlessly all through the building, and yet may have to take all these arches out and figure them as a total loss."

Bear in mind that the method employed in the construction of the building to which he refers was hard-tile side-construction, and compare results given by him to those shown by the Denver, Col., test in 1890.

We have before us a report on several tests made at the instance of the Tariff Association in co-operation with the Architectural League of New York and the American Society of Mechanical Engineers "to investigate and test methods of fireproofing structural metal in building and to obtain data for standard specifications." See *Architect and Contract Reporter*, London, September 11, 1896. From these we learn that at an average temperature of from 1,200° to 1,325° Fahr., steel and iron columns show red and begin to bend. Now, as we have stated that Terra Cotta is subjected in burning to a heat of 2,000° Fahr. and more, it will be apparent to every one that by protecting all iron or steel used in building, by that material, the principal element of danger is removed.

We cite below the opinion of Mr. Carrère, of Carrère & Hastings, and of Mr. Winslow, of Winslow & Wetherell, of Boston, taken from interviews had with several leading architects by the *Brickbuilder*, January 20, 1897. Mr. John M. Carrère says: That in his practice he has never had occasion to use anything except terra cotta for fireproofing purposes, considering that material the best in the market. He advocated a more thorough fireproofing of the columns in a building; in fact, his feeling was that while the system of fireproofing with terra cotta blocks is excellent, it is often not carried far enough, and terra cotta is used too sparingly about a building to make it what could be called absolutely fireproof. This is a pretty serious condition, as it leads to over-confidence on the part of the tenants, and when trouble comes, as it is very likely to in the long run, the whole system is apt to be condemned, whereas it is really the fault of the way in which it is used. In his judgment, the custom of building a steel frame and facing it with a relatively thin casing of stone on the outside, is not only not fireproof, but is criminal, in that it does not afford sufficient protection to the steel. A building cannot be called fireproof while any stone or iron is so used that it can be affected by heat or water, and terra cotta in some form should be used.

Mr. Winslow, of Winslow & Wetherell, Boston, stated: That he considered terra cotta itself thoroughly fireproof, and that fireproofing results are only a question of thickness of material and the manner of application. For that matter, good terra cotta is nothing but brick, and is generally conceded to be the best and most thorough protection against fire. We MAY be able to use other construction, but we KNOW we can trust terra cotta, and in the present state of the science there is nothing so satisfactory. Mr. Winslow said that in the so-called fireproof building, as actually built, the real protection is usually not carried sufficiently far. In any office building, for instance, there is enough wood about the doors and the finish, to say nothing of the contents, to make a very considerable fire if it once caught, and

he would prefer to see a building in which all inflammable material of this sort was eliminated, so that, at the most, nothing but the contents could be consumed. In one of the large buildings recently constructed by his firm, a fire started in one of the rooms after it was all finished and ready for occupancy. The doors, windows, and portions of the floor were almost entirely consumed, but the fire simply burned itself out. Winslow & Wetherell used hard terra cotta in the construction of the large Tremont Building just completed. They have used elsewhere the porous terra cotta, and are at present employing it in the Hotel Touraine, now in process of erection. For partitions they have never felt inclined to use anything but terra cotta blocks, nor would they care to make any experiments with any other forms which have been offered to them. They consider that the terra cotta blocks make a perfectly straight construction, and their experience leads them to believe that it will resist with perfect satisfaction the action of both fire and water. As a matter of stability he considered terra cotta floor blocks an excellent lateral brace. He cited the 30-story building which is now being constructed in Park Row, New York, from plans of Mr. Robertson, representing, in some respects, the latest work in tall-building construction, which, according to recent reports, is to be fireproof throughout, with porous terra cotta end-construction floor arches.

Undoubtedly all the various systems in the market were considered in connection with this building, but the fact that terra cotta has been used instead of anything else is pretty good evidence that the material is satisfactory to those who have had most experience therewith. Mr. Winslow concluded that when you come right down to the broad word of fireproofing a structure, he did not think anything was better than terra cotta in its various forms.

We have quoted the opinions of several architects and builders as to the qualities of Hollow Tile for fire and water resistance, strength, etc., and have also stated the resulting effects of a very severe trial, under actual building conditions, of that material in the Pittsburg fire of May last.

For tests of other material we refer those interested to *Engineering Record*, commencing at Vol. 36, No. 16, September 18, 1897, wherein will be found exhaustive reports of various tests made under the supervision of the New York Building Department. We also call attention to a paper on "The Action of Heat on Cement," by J. S. Dobie, graduate S. P. S., read before the Engineering Society School of Practical Science, Toronto, Ont., and published by order of the society, which gives the results of a series of tests made on over 200 briquettes of a mixture of 1 sand to 1 cement, 2 sands to 1 cement, and 3 sands to 1 cement, the briquettes varying in age from two months to about four years.

We give the foregoing simply to corroborate what we said before on the subject of thoroughly fireproofing a building (page 59), for even a casual investigation of the facts as shown, conclusively proves that wherever serious damage has resulted it can be traced to inefficient use or faulty methods of application of that same material, which, when employed efficiently, triumphantly stood the severest test—TERRA COTTA.

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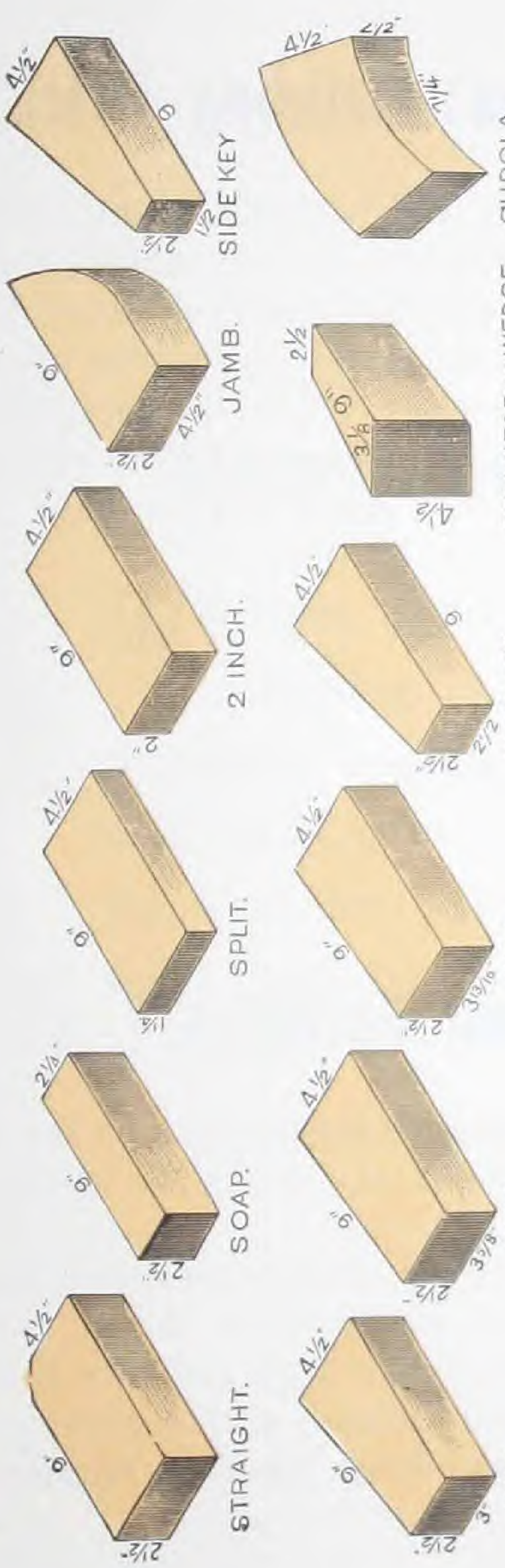

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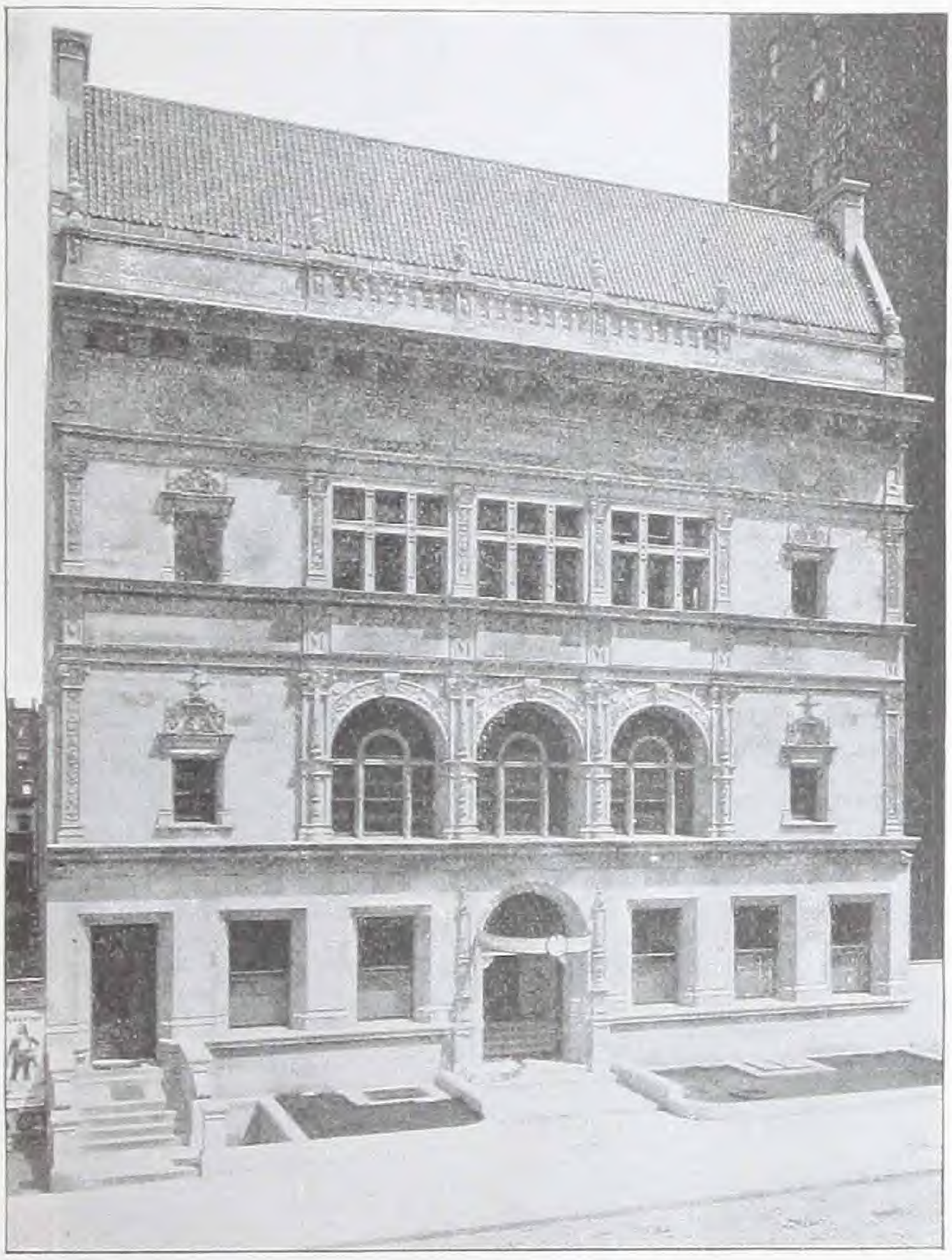

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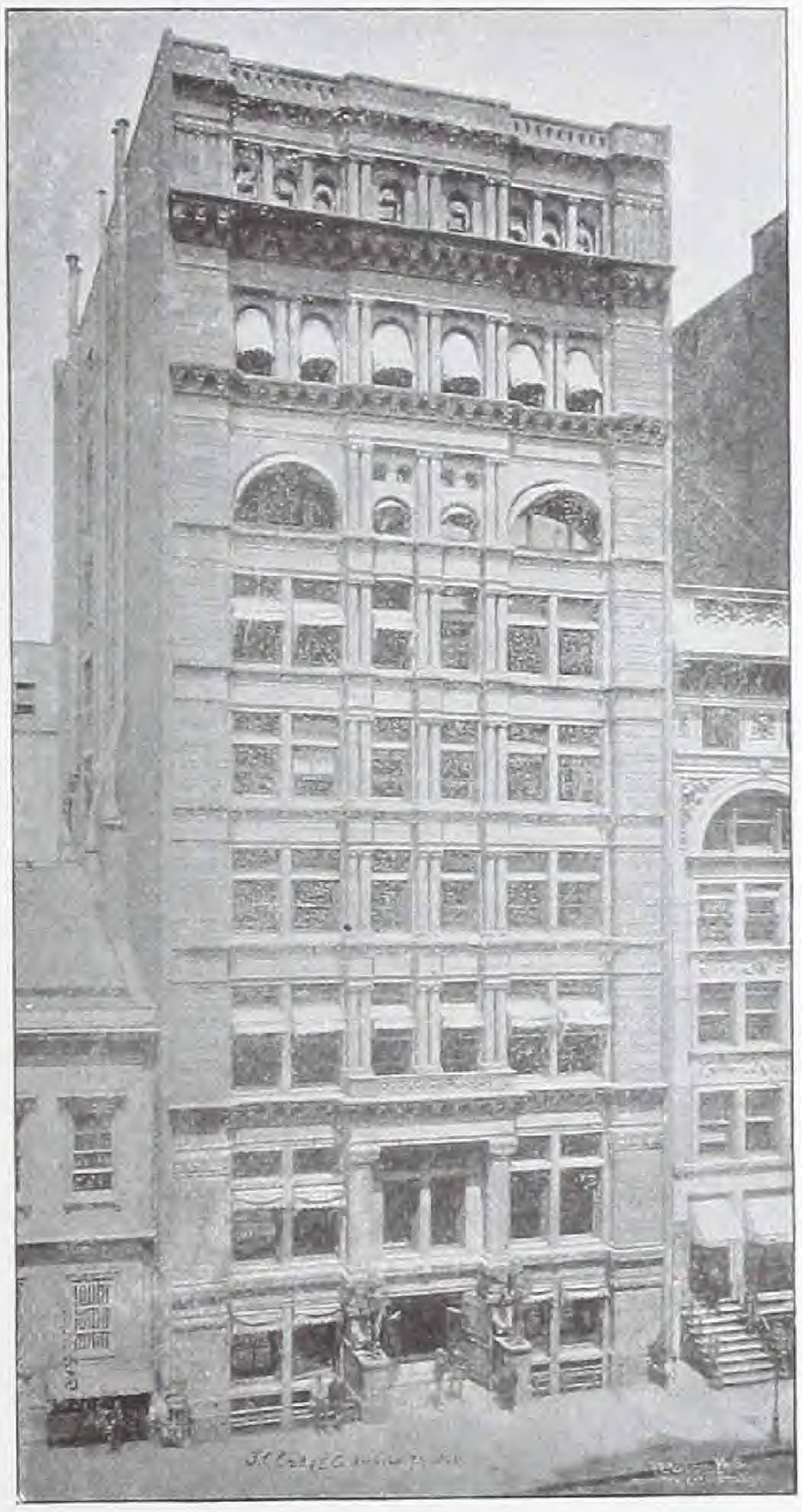

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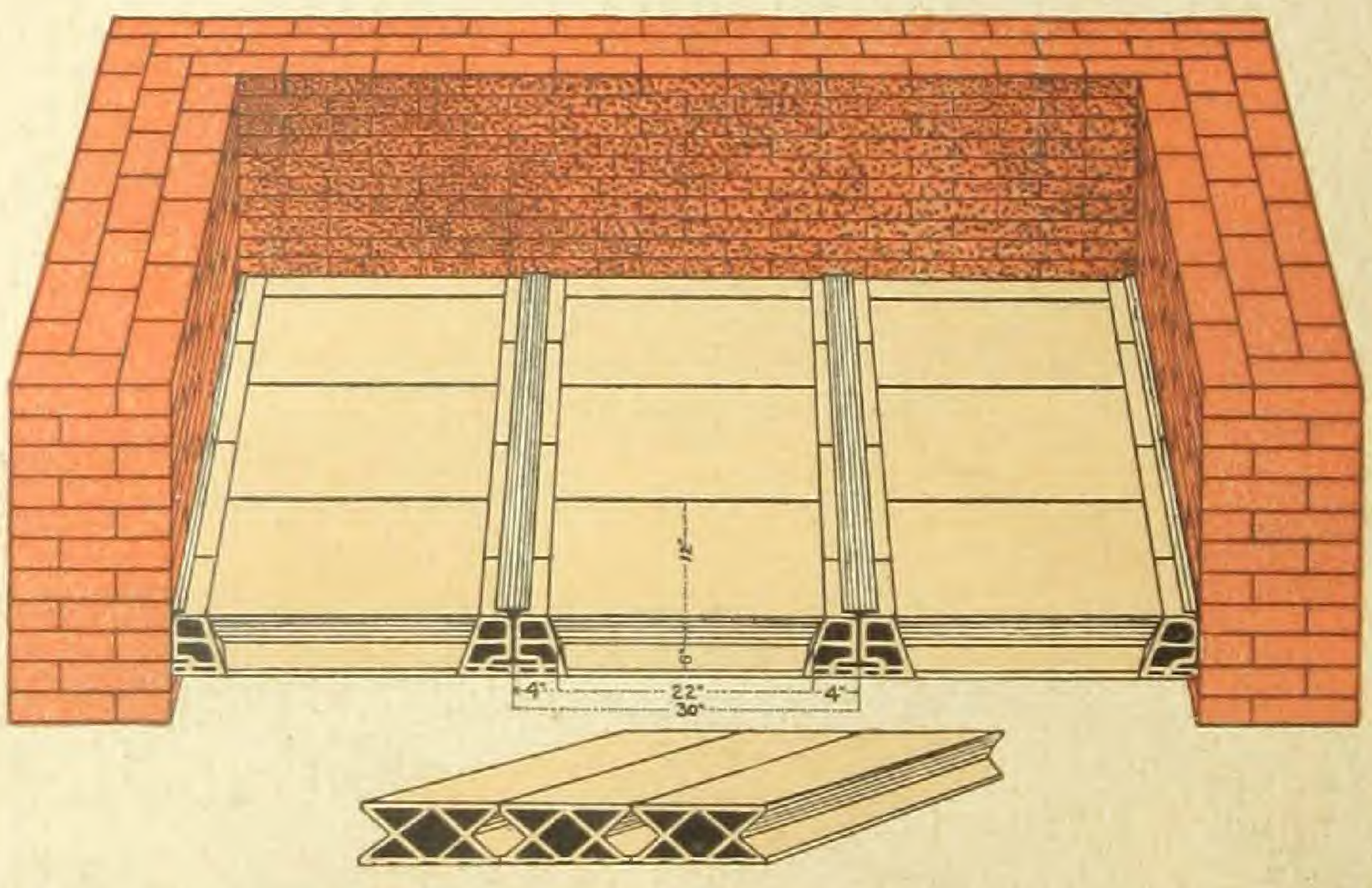

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